IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

POWER INTEGRATIONS, INC., a Delaware corporation, Plaintiff, v. FAIRCHILD SEMICONDUCTOR INTERNATIONAL, INC., a Delaware corporation, and FAIRCHILD SEMICONDUCTOR CORPORATION, a Delaware corporation, and SYSTEM GENERAL CORPORATION, a Taiwanese corporation, Defendants.	**REDACTED PUBLIC VERSION** C.A. No. 08-309-JJF-LPS

MEMORANDUM IN SUPPORT OF DEFENDANTS' AND COUNTERCLAIMANTS' MOTION TO STRIKE AND DISMISS PLAINTIFF'S THIRD AMENDED DEFENSES AND COUNTERCLAIMS OF INEQUITABLE CONDUCT AND PATENT MISUSE

ASHBY & GEDDES
John G. Day (I.D. #2403)
Lauren E. Maguire (I.D. #4261)
Andrew Cordo (I.D. #4534)
500 Delaware Avenue, 8th Floor
P.O. Box 1150
Wilmington, Delaware 19899
302-654-1888
jday@ashby-geddes.com
lmaguire@ashby-geddes.com
acordo@ashby-geddes.com

Attorneys for Defendants

Of Counsel:

ORRICK, HERRINGTON & SUTCLIFFE LLP
G. Hopkins Guy, III (#124811)
Vickie L. Feeman (#177487)
Bas de Blank (#191487)
Ulysses Hui (#225521)
1000 Marsh Road
Menlo Park, CA 94025
Telephone: (650) 614-7400

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I. INTRODUCTION

In its pleadings alleging inequitable conduct, Plaintiff Power Integrations did not comply with the pleading requirements for Federal Rule of Civil Procedure 9(b) as set forth in *Exergen Corp. v. Wal-Mart Stores, Inc.*, --- F.3d ---, 2009 WL2366535 (Fed. Cir. 2009). Federal Rule of Civil Procedure 9(b) requires that "[i]n all averments of fraud or mistake, the circumstances constituting fraud or mistake shall be stated with particularity." In *Exergen*, the Federal Circuit set clear guidelines as to the heightened pleading requirements for inequitable conduct. "A pleading that simply avers the substantive elements of inequitable conduct, without setting forth the particularized factual bases for the allegation, does not satisfy Rule 9(b)." *Exergen*, at *11.

Power Integrations has had many opportunities to plead the inequitable conduct defenses and counterclaims to the satisfaction of Rule 9(b). Through several communications, Defendants Fairchild Semiconductor International, Inc., Fairchild Semiconductor Corporation and System General Corporation (collectively, "Fairchild") have identified to Power Integrations deficiencies in its amended pleadings and explained why Power Integrations had not pled inequitable conduct as required under law. Power Integrations has amended its pleadings three times and, as illustrated below, still fails to set forth the particularized factual bases for its allegations of inequitable conduct as required by Rule 9(b). Since Power Integrations has not pled with particularity the requisite materiality, knowledge, and intent elements for inequitable conduct despite many opportunities to amend its pleadings, Fairchild respectfully requests that the Court strike and dismiss these allegations with prejudice.

II. STATEMENT OF FACTS

In its answer to Power Integrations' complaint, Fairchild asserted U.S. Patent Nos. 7,259,972 (the "'972 patent"), 7,352,595 (the "'595 patent"), and 7,061,780 (the "'780 patent") against Power Integrations. Power Integrations responded to Fairchild's counterclaims on November 19, 2008. Power Integrations did not allege inequitable conduct. On July 24, 2009, however, Power Integrations indicated that it intended to amend its answer and counterclaims to allege inequitable conduct. As this was in advance of the deadline set forth by the Court,

Fairchild agreed not to oppose to Power Integrations' motion to amend in an effort to avoid unnecessary litigation.[1] Power Integrations amended its answer and counterclaims to allege defenses and counterclaims based on inequitable conduct on August 5, 2009. (D.I. 117).

On the same day Power Integrations filed its First Amended Answer and Counterclaim, the Federal Circuit issued the *Exergen* decision articulating the heightened standard of pleading for inequitable conduct under Rule 9(b). As the Federal Circuit also identified in *Exergen* what does ***not*** constitute sufficient pleadings, Fairchild explained why Power Integrations' amended pleadings were inadequate and failed to meet the heightened pleadings standard via several letters. Exs. B, C. Power Integrations then filed a Second Amended Answer and Counterclaims on August 31, 2009. (D.I. 135). Again, Fairchild did not oppose the motion to amend, but continued to disagree with the substance of the allegations. Ex. D. Power Integrations filed the Third Amended Answer and Counterclaims ("Third Amended Answer") on September 4, 2009. (D.I. 144).

III. ARGUMENTS

A. Legal Standards

Allegations of inequitable conduct are governed by the higher pleading standards of Federal Rules of Civil Procedure 9(b), which requires that "[i]n all averments of fraud or mistake, the circumstances constituting fraud or mistake shall be stated with particularity." Fed. R. Civ. P. 9(b). The Federal Circuit articulates the pleading requirements for inequitable conduct allegations as follows:

> [T]o plead the "circumstances" of inequitable conduct with the requisite "particularity" under Rule 9(b), the pleading must identify the specific ***who, what, when, where, and how*** of the material misrepresentation or omission committed before the PTO. Moreover, although "knowledge" and "intent" may be averred

[1] Fairchild did not oppose the motion for leave to amend. However, Fairchild made it clear that they strongly disputed the allegations and did not agree that Power Integrations has adequately pled the issues. Fairchild reserved the right to move to strike, object, or otherwise respond to the substance of the pleadings as appropriate. Exs. A, B, C.

> generally, a pleading of inequitable conduct under Rule 9(b) ***must include sufficient allegations of underlying facts*** from which a court may ***reasonably infer*** that a specific individual (1) knew of the withheld material information or of the falsity of the material misrepresentation, and (2) withheld or misrepresented this information with a specific intent to deceive the PTO.

Exergen, at *13 (Fed. Cir. 2009) (emphases added). Where these heightened pleading requirements have not been met, the Court should strike and dismiss the inequitable conduct defense and counterclaims pursuant to Federal Rules of Civil Procedure 12(f) and 12(b)(6), respectively.

Federal Rule of Civil Procedure 12(f) provides that "[a] court may order stricken from any pleading any insufficient defense or any redundant, immaterial, impertinent, or scandalous matter." Fed. R. Civ. P. 12(f). "A motion to strike under Rule 12(f) eliminates insufficient defenses and saves the time and expense of litigating issues that ultimately would not affect the outcome of the case." *Lannett Co. Inc. v. KV Pharmaceuticals*, 2008 WL 4974579, *2 (D. Del. 2008). A motion to strike a defense may be granted where, as here, the insufficiency of the affirmative defense is "clearly apparent" as a matter of law. *See Symbol Technologies v. Aruba Networks, Inc.*, 609 F.Supp.2d 353, 356 (D. Del. 2009) citing *Cipollone v. Liggett Group, Inc.*, 789 F.2d 181, 188 (3d Cir.1986), *rev'd on other grounds,* 505 U.S. 504 (1992), (internal citations omitted). Although when ruling on a motion to strike the Court must construe all facts in favor of the nonmoving party, *id.* at 356, in doing so, it need not credit a party's conclusory allegations, bald assertions, or legal conclusions masquerading as factual claims. *Morse v. Lower Merion Sch. Dist.*, 132 F.3d 902, 906 fn. 8 (3d Cir. 1997).

To survive a motion to dismiss its inequitable conduct counter claims under Federal Rule of Civil Procedure 12(b)(6), Power Integrations must have alleged sufficient particularized facts to "state a claim to relief that is plausible on its face." *See Bell Atl. Corp. v. Twombly*, 550 U.S. 544, 570 (2007). The factual allegations "must be enough to raise a right to relief above the speculative level on the assumption that all of the complaint's allegations are true." *Id.* at 547, 555. As with a motion to strike, the court must consider all factual allegations in a light most favorable to plaintiff. *Sun Microsystems, Inc., v. Versata Enterprises, Inc. et. al.*, --- F.Supp.2d -

--, 2009 WL1904369 at *4 (D. Del. 2009) citing *Erickson v. Pardus*, 551 U.S. 89 (2007). The party moving to dismiss has the burden of persuasion. *See Kehr Packages, Inc. v. Fidelcor, Inc.*, 926 F.2d 1406, 1409 (3d. Cir. 1991).

B. Power Integrations' Inequitable Conduct Allegations Violate Rule 9(b) and Should Be Stricken

Power Integrations alleges that the patents asserted by Fairchild are unenforceable due to inequitable conduct committed during the prosecution of those patents. Power Integrations' general and unsupported allegations, however, fail to meet the standard required by the Federal Rules and the Federal Circuit. Power Integrations' claims of inequitable conduct fail to set forth the particularized factual bases as required by Rule 9(b) and do not give rise to a reasonable inference of the knowledge and intent necessary to assert a claim of inequitable conduct. As such, Power Integrations' defenses should be stricken and its counterclaims should be dismissed.

1. Power Integrations' Pleading of Inequitable Conduct With Respect to the '780 Patent Fails to Meet the Standard Required by the Federal Circuit

Power Integrations alleges inequitable conduct because U.S. Patent No. 6,249,876 (the "'876 patent") was not disclosed during the prosecution of the '780 patent, despite having been referred to in the specification of earlier co-pending patents, U.S. Patent Nos. 7,026,851 (the "Yang '851 patent") and 7,184,283 (the "'283 patent"). D.I. 144 ¶ 87. The Yang '851 patent and the '283 patent have the same first inventor – Mr. Ta-yung "Tom" Yang – as the '780 patent, and were prosecuted on behalf of Mr. Yang and Systems General by J.C. Patents. Power Integrations also claims that information about the TNY256 and TNY264/266-268 products was improperly withheld. *Id.* ¶ 88. Because Power Integrations has failed to allege that this information was material and has failed to allege facts supporting a reasonable inference of knowledge or intent, it has not sufficiently stated a claim of inequitable conduct.

a. Power Integrations Fails to Plead Materiality of the Omitted Information

Power Integrations' circuitous factual pleading of inequitable conduct with respect to the

'780 patent fails to establish the materiality of the information not presented to the PTO. Power Integrations' allegations regarding materiality are as follows:

> 1. Claim 4 of the '780 patent is similar claim 26 of the '972 patent. D.I. 144 ¶ 85.
>
> 2. Since Defendants asserted claim 26 against the LinkSwitch-II products, Defendants have implicitly construed claim 26 to cover Power Integrations' LinkSwitch-II's frequency jitter circuit. *Id.* ¶ 86.
>
> 3. The LinkSwitch-II's frequency jitter circuit is "substantially identical" to the frequency jitter component of the TNY256 and TNY264/266-268 products and to the frequency jitter circuit disclosed in the '876 patent. *Id.*
>
> 4. "Given the proposed construction of this claim language implicit in Defendants' infringement contentions and assertion of infringement with respect to the LinkSwitch-II products (a construction Power Integrations contends is improper), Mr. Yang knew that Power Integrations TNY256 and TNY264/266-268 products and the '876 patent were material to the patentability of at least claim 4 of the '780 patent." *Id.*

Power Integrations ***never alleges that the TNY256 and TNY264/266-268 products or the '876 patent are material.*** Rather, Power Integrations confusingly alleges that Mr. Yang "knew the information was material"[2] without ever alleging that it actually was material. *Id.* ¶ 86. Power Integrations also ***fails to allege that material prior art was withheld from the patent office.*** *Id.* ¶ 92 (alleging simply that "the intentionally deceptive failure of Mr. Yang, Mr. Hung, and J.C. Patents' Mr. Huang to disclose to the PTO Power Integrations' TNY236 and TNY264/266-268 and '876 patent, known to them during the prosecution of the Yang '780 patent, renders the Yang '780 patent unenforceable for inequitable conduct.") Power Integrations has failed to plead a substantive element of inequitable conduct and its inequitable conduct defense and counterclaim pertaining to the '780 patent must fail for that reason alone.[3]

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[2] Despite having deposed Mr. Yang, Power Integrations does not provide any factual support for its conclusory assertion that Mr. Yang "knew the information was material." In contrast to factual assertions, which are assumed to be true, when deciding a motion to strike or dismiss the Court need not credit a party's conclusory allegations, bald assertions, or legal conclusions masquerading as factual claims. *Morse*, 132 F.3d at 906 fn. 8.

[3] "The substantive elements of inequitable conduct are: (1) an individual associated with the filing and prosecution of a patent application made an affirmative misrepresentation of a material

Moreover, Power Integrations failed to establish the "who, what, when, where, and how of" of a material omission committed before the PTO. *See Exergen*, at *12.

(1) Power Integrations Fails to Identify "What" and "Where"

Power Integrations has to go through at least four steps to establish a connection between the allegedly withheld information and the '780 patent. These allegations, however, still do not provide factual support to show the "what" and "where" elements of the alleged inequitable conduct, as required by *Exergen*. To satisfy the "what" and "where" elements of a material omission, the Federal Circuit requires identification of "***which claims, and which limitations in those claims***, the withheld references are relevant to, and ***where*** in those references the material is found." *Exergen*, at *13 (emphases added). Power Integrations does not identify which limitations the '876 patent or the TNY256 and TNY264/266-268 products are allegedly relevant to, or where in those references supposedly material information may be found.

(2) Power Integrations Fails to Identify "Why" and "How"

Power Integrations also fails to explain "why" the allegedly withheld information is material to the prosecution of the '780 patent and "how" an examiner would have used this information in assessing the patentability of the claims of the '780 patent. Specifically, Power Integrations fails to show why and how the information disclosed in the '876 patent or the TNY256 and TNY264/266-268 products is relevant to the patentability of claim 4. As a dependent claim, claim 4 of the '780 patent standing alone is not required to be novel. Rather, the patentability of claim 4 depends on claims 1 and 2, which include at least 10 additional limitations that Power Integrations did not address in its allegations. Thus, even if the Court assumed that information contained in the '876 patent and the TNY256 and TNY264/266-268 products is relevant to the additional limitations of claim 4, and not cumulative to the

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fact, failed to disclose material information, or submitted false material information; and (2) the individual did so with a specific intent to deceive the PTO." *Exergen* at *11, fn. 3 (citations omitted)

information of record, Power Integrations has not demonstrated that such information would have any affect on the patentability of claim 4 because Power Integrations did not allege facts demonstrating that the elements of claims 1 and 2, from which claim 4 depends, are disclosed in the allegedly withheld art or the prior art of record. *See* Exergen, at *13. 0

b. Power Integrations' Allegations Do Not Give Rise to a Reasonable Inference of Knowledge or Intent

As set forth by the Federal Circuit in *Exergen*, "a pleading of inequitable conduct under Rule 9(b) ***must include sufficient allegations of underlying facts*** from which a court may ***reasonably infer*** that a specific individual (1) knew of the withheld material information or of the falsity of the material misrepresentation, and (2) withheld or misrepresented this information with a specific intent to deceive the PTO." *Exergen*, at *13 (emphases added). "Whereas an inference of deceptive intent must be reasonable and drawn from a pleading's allegations of underlying fact to satisfy Rule 9(b), this inference must be 'the single most reasonable inference able to be drawn from the evidence to meet the clear and convincing standard.'" *Id.* at fn. 5 citing *Star Scientific, Inc. v. R.J. Reynolds Tobacco Co.*, 437 F.3d 1357, 1366 (Fed. Cir. 2008).

Power Integrations does not plead with particularity that Mr. Yang, his co-inventor Mr. Hung, or J.C. Patents' Mr. Huang had knowledge of the allegedly withheld information, that they knew the information was material, or that they deliberately withheld the information from the PTO.

(1) Power Integrations Fails to Establish Knowledge

Power Integrations' allegations are insufficient to establish knowledge of the '876 patent or its materiality to the '780 patent. Power Integrations' alleges that Mr. Yang, Mr. Hung, and Mr. Huang were aware of the '876 patent because it was cited in the specification of the earlier co-pending Yang '851 patent and the '283 patent. D.I. 144 ¶ 88. As the Federal Circuit noted in *Exergen*, however, awareness of the '876 patent during the prosecution of prior patent applications does not provide a factual basis to infer that Mr. Yang, Mr. Hung, or Mr. Huang knew of the specific information in the '876 patent that is alleged to be material to the claims of

the '780 patent. *See Exergen,* at 14 (being "aware" of the prior art references in general and becoming "aware of [these references] during the prosecution of . . . prior applications" does not provide a "factual basis to infer that any specific individual, who owed a duty of disclosure in prosecuting the [] patent, knew of the specific information in the [prior art references] that is alleged to be material to the claims of the patent."[4] *Exergen*, at *14.

Power Integrations also fails to establish knowledge with respect to the TNY256 and TNY264/266-268 products. Power Integrations asserts that Mr. Yang, Mr. Hung, and Mr. Huang knew about the TNY256 and TNY264/266-268 products because these products were given passing reference in an article by Rahkala ("the Rahkala article"), which was cited in the Yang '851 patent and '283 patents. Referring to the Rahkala article, the TNY256 and TNY264/266-268 datasheets were only cited in footnotes 5 and 6 and not discussed in the text or shown in the figures. *See* Exhibit E. Critically, Power Integrations does not allege that the Rahkala article, itself, is material or relevant to the '780 patent. Power Integrations essentially asks the Court to assume that Mr. Yang, Mr. Hung, and Mr. Huang (i) recalled the Rahkala article at the time of prosecuting the '780 patent (ii) understood that while the Rahkala article was not relevant to the '780, datasheets cited in a footnote to that article may be relevant, (iii) read the footnotes and saw the reference to the datasheets, (iv) acquired and reviewed the datasheets, (v) understood that they were material to the '780 patent, and (vi) intentionally withheld that information. These unsupported conjectures are at least one step beyond the scenario the Federal Circuit held to be insufficient to show knowledge in *Exergen*. In that case, the Federal Circuit held that it was improper to assume knowledge of alleged material information contained in a patent simply because that patent was disclosed during the

[4] In *Exergen*, Defendants alleged that Exergen had the opportunity and obligation to disclose the relevant prior art because "Exergen was aware of the '808 patent and the '998 patent prior to the issuance of the '685 patent" and because they were "material to the patentability of the '685 patent." *Exergen*, at *10. The court held that the pleading was factually deficient because it "provides no factual basis to infer that any specific individual, who owed a duty of disclosure in prosecuting the '685 patent, knew of the specific information in the '808 and '998 patents that is alleged to be material to the claims of the '685 patent." *Id.* at *13.

prosecution of a prior application.[5] Here, Power Integrations alleges knowledge of information contained in datasheets cited in a footnote to another reference simply because the article was cited during the prosecution of a prior application. This requires first an improper assumption under *Exergen* that Mr. Yang, Mr. Hung, or Mr. Huang knew of the footnoted reference to the TNY256 and TNY264/266-268 datasheets and an even more implausible assumption that they knew of specific information contained within the datasheets. Even taken in a light most favorable to Power Integrations, such assertions do not give rise to a reasonable inference that any of those individuals knew about the TNY256 and TNY 264/266-268 products allegedly withheld from the PTO, or that any specific information about those products was relevant to the patentability of the '780 patent. *Exergen*, at *13, fn. 5

(2) Power Integrations Fails to Establish Intent

Power Integrations also fails to plead with particularity evidence of specific intent to deceive the PTO. "Although 'knowledge' and 'intent' may be averred generally, [Federal Circuit] precedent, like that of several regional circuits, requires that the pleadings allege sufficient underlying facts from which a court may reasonably infer that a party acted with the requisite state of mind." *Id.* at *12, fn. 4 (citing a litany of cases holding that under Rule 9(b) plaintiffs must allege facts that provide a basis for inferring specific intent).

Power Integrations asserts that deceptive intent is allegedly "apparent from the pattern of selective nondisclosure" during the prosecution of the '780 patent, i.e. disclosing the '876 patent and the Rahkala article in connection with the earlier co-pending Yang '283 and '851 patents, but not during the prosecution of the '780 patent. D.I. 144 ¶ 91. As set forth in *Exergen*, "[t]he mere fact that an applicant disclosed a reference during prosecution of one application, but did not disclose it during prosecution of a related application, is insufficient to meet the threshold

[5] Defendants' allegation that "'Exergen was aware' of the '808 and '998 patents in general and that Exergen had become aware of them during the prosecution of Exergen's own prior applications" does not provide facts that would support "a reasonable inference that a relevant individual knew of the allegedly material information contained in the '808 and '998 patents." *Exergen*, at *14.

level of deceptive intent required to support an allegation of inequitable conduct." *Exergen*, at *14. Thus, citing the '876 patent during the prosecution of the earlier co-pending Yang '851 and '283 patents and not disclosing it during the prosecution of the '780 patent is not sufficient evidence to support a reasonable inference of deceptive intent under Rule 9(b).

With respect to the TNY256 and TNY264/266-268 products, Power Integrations does not provide any facts to show that Mr. Yang, Mr. Hung, and Mr. Huang were even aware of these products during the prosecution of the '780 patent. Under Rule 9(b) and *Exergen*, the requisite intent has not been adequately pled.

In summary, Power Integrations has failed to plead facts from which the Court could reasonably infer knowledge or specific intent. Since the insufficiency of the affirmative defense is "clearly apparent," and Power Integrations has not stated "a claim to relief that is plausible on its face," the Court should grant Fairchild's motion to strike and dismiss the pleadings of inequitable conduct with respect to the '780 patent. *See Symbol Technologies*, 609 F.Supp.2d at 356; *Bell Atl. Corp.*, 550 U.S. at 570.

2. Power Integrations' Pleading of Inequitable Conduct With Respect to the '595 Patent Fails to Meet the Standard Required by the Federal Circuit

Power Integrations alleges that the failure to disclose U.S. Patent No. 6,480,399 (the "'399 patent") and Power Integrations' TNY256 and TNY264/268 products during the prosecution of the '595 patent constitutes a breach of duty of good faith and candor in dealing with the PTO. Power Integrations' '399 patent was cited and described in two earlier co-pending United States patents, U.S. Patent No. 6,862,194 (the "'194 patent") and U.S. Patent No. 6,853,563 (the "'563 patent"). The '194 patent and the '563 patent have the same first inventor – Mr. Ta-yung "Tom" Yang – as the '595 patent, and were prosecuted on behalf of Mr. Yang and Systems General by J.C. Patents. Because Power Integrations has failed to allege facts supporting a reasonable inference of knowledge or intent, it has not sufficiently stated a claim of inequitable conduct.

a. Power Integrations' Allegations Do Not Give Rise to a Reasonable Inference of Knowledge

Power Integrations did not plead with particularity that either Mr. Yang or J.C. Patents' Mr. Huang had knowledge of the purportedly withheld material information as required by Rule 9(b). Even if the facts asserted by Power Integrations are assumed to be true, and taken in a light most favorable to Power Integrations, those facts at most merely support an inference that Mr. Yang or J.C. Patents' Mr. Huang was ***generally*** aware of the '399 patent. The Federal Circuit held in *Exergen* that being "aware" of the prior art references in general and becoming "aware of [these references] during the prosecution of . . . prior applications" does not provide a "factual basis to infer that any specific individual, who owed a duty of disclosure in prosecuting the [] patent, knew of the specific information in the [prior art references] that is alleged to be material to the claims of the patent."[6] *Exergen*, at *14. The court in *Exergen* explained that knowledge of the prior art references does not provide a factual basis for inference of inequitable conduct because:

> A reference may be many pages long, and its various teachings may be relevant to different applications for different reasons. Thus, one cannot assume that an individual, who generally knew that a reference existed, also knew of the specific material *information* contained in that reference.

Exergen, at *14.

Here, Power Integrations alleges that six lines and one figure of the '399 patent are relevant to a single limitation of a single claim of the '595 patent. D.I. 144, Appendix A at p. 8. Power Integrations' plain statement that Mr. Yang and Mr. Huang allegedly "knew" of the '399 patent because it was cited in the earlier Yang '194 and '563 patents does not provide any factual basis to infer that either Mr. Yang or Mr. Huang knew of the specific alleged material

[6] In *Exergen*, Defendants alleged that Exergen had the opportunity and obligation to disclose the relevant prior art because "Exergen was aware of the '808 patent and the '998 patent prior to the issuance of the '685 patent" and because they were "material to the patentability of the '685 patent." *Exergen*, at *10. The court held that the pleading was factually deficient because it "provides no factual basis to infer that any specific individual, who owed a duty of disclosure in prosecuting the '685 patent, knew of the specific information in the '808 and '998 patents that is alleged to be material to the claims of the '685 patent." *Id.* at *13.

information within these references or of the purported relevance of this material to the '595 patent.

Power Integrations' argument that Mr. Yang and J.C. Patents' Mr. Huang "knew" of particular Power Integrations TinySwitch products because the '399 patent referred to other members of the same family of products is even more tenuous. Power Integrations essentially asks the Court to assume that because the '399 patent was disclosed in other applications Mr. Yang and Mr. Huang (i) recalled the '399 patent at the time the '595 patent was being prosecuted, (ii) knew of the specific reference in the '399 patent to TinySwitch products that were ***not allegedly withheld***, (iii) further knew of ***other*** TinySwitch products that were ***not referenced*** in the '399 patent (iv) acquired and reviewed information about those other TinySwitch products (v) understood that this information was material to the '595 patent and (vi) intentionally withheld the information from the PTO. Even taken in a light most favorable to Power Integrations, mere knowledge of the '399 patent does not give rise to a reasonable inference that Mr. Yang or J.C. Patents' Mr. Huang had any knowledge of the TNY 256 or TNY264/266-268 products when prosecuting the '595 patent, let alone knowledge of the purported relevance of those products to the '595 patent.

b. Power Integrations' Allegations Do Not Give Rise to a Reasonable Inference of Intent

Power Integrations also fails to plead with particularity any evidence of specific intent to deceive the PTO. *Exergen*, at *12, fn. 4. As discussed above, Power Integrations' pleading does not contain specific factual allegations to show, or even support an inference, that Mr. Yang or Mr. Huang knew of the specific information that is alleged to be material to the '595 patent. Power Integrations cannot establish a deliberate decision to withhold information where it cannot even establish knowledge of the allegedly material information.

Moreover, even assuming, for sake of argument, that knowledge were sufficiently alleged, Power Integrations still has not plead any facts from which the Court could reasonably

infer that Fairchild intentionally withheld the information. Rather, without offering any factual support, Power Integrations conclusorily asserts that evidence of deceptive intent "is apparent from the pattern of selective disclosure exhibited by Mr. Yang and J.C. Patents' Mr. Huang, including their failure to cite the Power Integrations '399 patent and the TNY256 and TNY264/266-268 products during the prosecution of the '595 patent despite this art having been cited in the earlier co-pending Yang '194 and '563 patents."[7] D.I. 144 ¶ 102 . This allegation, however, is clearly insufficient to meet the threshold level of deceptive intent required to support an allegation of inequitable conduct:

> The mere fact that an applicant disclosed a reference during prosecution of one application, but did not disclose it during prosecution of a related application, is insufficient to meet the threshold level of deceptive intent required to support an allegation of inequitable conduct.

Exergen, at *15. Power Integrations' pleading is deficient in the same manner as the pleading in *Exergen*, where the Defendants' purported basis for inferring deceptive intent is that "Exergen had cited the '998 patent when prosecuting the '205 patent but then failed to cite it when prosecuting the '685 patent." *Id.* Likewise, the fact that the '399 patent was disclosed during the prosecution of the earlier co-pending Yang '194 and '563 patents, but not cited during the prosecution of the '595 patent, does not support a reasonable inference of deceptive intent under Rule 9(b). Even if true, the circumstances that Power Integrations has alleged do not "plausibly suggest any 'deliberate decision to withhold a known material reference' or to make a knowingly false misrepresentation." *Exergen,* at *15.

In summary, Power Integrations has failed to plead facts from which the Court could reasonably infer knowledge or specific intent. Since the insufficiency of the affirmative defense

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[7] It is also worth noting that this sweeping conclusion is not based on the facts recited in the pleadings. Power Integrations does not contend that the TNY256 and TNY264/266-268 are disclosed in the Yang '194 and '563 patents. D.I. 144 ¶¶ 97, 99. Rather, Power Integrations asserts that the '399 patent is disclosed in the Yang '194 and '563 patents, and that other TinySwitch products are identified in the disclosed '399 patent. Although factual pleadings must be accepted as true, the Court need not accept as true conclusory allegations that are not based on the factual pleadings. *Morse*, 132 F.3d at 906 fn. 8 (a court need not credit a party's conclusory allegations, bald assertions, or legal conclusions masquerading as factual claims).

is "clearly apparent," and Power Integrations has not stated "a claim to relief that is plausible on its face," the Court should grant Fairchild's motion to strike and dismiss the pleadings of inequitable conduct with respect to the '595 patent. *See Symbol Technologies*, 609 F.Supp.2d at 356; *Bell Atl. Corp.*, 550 U.S. at 570.

3. Power Integrations' Pleading of Inequitable Conduct With Respect to the '972 Patent Fails to Meet the Standard Required by the Federal Circuit

The references Power Integrations alleges to have been material and withheld during the prosecution of the '972 patent are the '876 patent and the TNY256 and TNY264/266-268 products discussed above, and Power Integrations' U.S. Patent No. 6,229,366 (the "'366 patent"). Power Integrations once again bases its entire inequitable conduct allegations on the fact that the allegedly withheld references were disclosed (or referred to in other disclosed references) during the prosecution of the Yang '851 and '283 patents that were pending before the PTO during the prosecution of the '972 patent. Because Power Integrations has failed to plead adequate facts of materiality and has failed to allege facts supporting a reasonable inference of knowledge or intent, it has not sufficiently stated a claim of inequitable conduct.

a. Power Integrations Fails to Plead Materiality of the Omitted Information

Power Integrations' pleading with respect to the '972 patent fails to identify the "who" element of the circumstances of the alleged inequitable conduct, as required by *Exergen*. *Exergen* at *13. As such, these claims of inequitable conduct do not provide sufficient factual support to demonstrate materiality of the omitted information and, therefore, should be stricken.

In particular, Power Integrations fails to sufficiently identify any specific individual or individuals associated with the filing or prosecution of the application issuing as the '972 patent, who both knew of the material information and deliberately withheld or misrepresented it. Although Power Integrations alleges that J.C. Patents' Mr. Huang had knowledge of the allegedly withheld references, Power Integrations does not allege that Mr. Huang was involved in the prosecution of the '972 patent. The '972 patent was prosecuted by attorneys at the law

firm of Finnegan, Henderson, Farabow, Garrett & Dunner LLP ("Finnegan") and not by Mr. Huang or J.C. Patents. Instead, Power Integrations reserved the right to amend its pleading to add the names of "other SG employees or agents associated with the prosecution of the Yang patents," "other J.C. Patents attorneys or agents associated with the prosecution of the Yang patents," and "other Finnegan attorneys or agents associated with the prosecution of the Yang patents." D.I. 144 ¶¶ 68-70. The Federal Circuit states in *Exergen* that a pleading referring generally to "Exergen, its agents and/or attorneys" fails to identify the "who" of the material omissions. *Exergen*, at *13. Similarly, Power Integrations fails to satisfy this requirement when reserving its rights to add the names of SG's, J.C. Patents', and Finnegan's "attorneys or agents" rather than naming the specific individuals that allegedly committed inequitable conduct before the PTO.

b. Power Integrations' Allegations Do Not Give Rise to a Reasonable Inference of Knowledge or Intent

Although Power Integrations alleges that "Mr. Yang and J.C. Patents' Mr. Huang knew about Power Integrations' '876 and '366 patents during prosecution of the Yang '972 patent," Power Integrations did not plead specific facts that would support an inference that either Mr. Yang or J.C. Patents' Mr. Huang had knowledge of the allegedly material information contained within those patents or that they deliberately withheld relevant prior art from the PTO. To begin, as discussed above, Power Integrations has not alleged that Mr. Huang was involved in the prosecution of the '972 patent. Moreover, once again, Power Integrations' only purported basis for alleging that Mr. Yang knew about the '876 and the '366 patents was that these patents were cited in the specifications of the co-pending '283 and '851 patents. Similarly, Power Integrations once again asserts that Mr. Yang knew about the material information in the TNY256 and TNY264/266-268 products because the datasheets for those products were referenced in footnotes in the Rahkala article cited as prior art in the co-pending Yang patents.

(1) Power Integrations Fails to Establish Knowledge

Power Integrations' allegations are insufficient to establish knowledge of the alleged

material information. As the Federal Circuit held in *Exergen*, awareness of the '876 and '366 patents during the prosecution of prior applications does not provide a factual basis to infer that Mr. Yang knew of the specific information in the prior art references that is alleged to be material to the claims of the '972 patent.[8] *Exergen*, at *14. With regard to the TNY256 and TNY264/266-268, as discussed above with respect to the '780 patent, the fact that datasheets for those products were cited in footnotes to the Rahkala article, which in turn was cited in the co-pending patents, is woefully inadequate to support a reasonable inference that Mr. Yang was aware of those products or the specific alleged material information contained within the TNY256 and TNY264/266-268 products. *See* Exhibit E.

(2) Power Integrations Fails to Establish Intent

Power Integrations' allegations do not provide sufficient factual bases from which the Court may reasonably infer intent. As the Federal Circuit explained in *Exergen*, "[a] reasonable inference is one that is plausible and that flows logically from the facts alleged, including any objective indications of candor and good faith." *Exergen*, at fn. 5. Since the conclusory allegations found in paragraphs 79 and 80 of Power Integration's Third Amended Answer are not grounded in fact, the Court is not required to credit those assertions. *See Morse*, 132 F.3d at 906 fn. 8 (in ruling on a motion to strike, a court need not credit a party's conclusory allegations, bald assertions, or legal conclusions masquerading as factual claims).

First, Power Integrations points to the non-disclosure of the '876 and '366 patents and the TNY256 and TNY264/266-268 products during the prosecution of the '972 patent. However, "[t]he mere fact that an applicant disclosed a reference during prosecution of one application, but did not disclose it during prosecution of a related application, is insufficient to meet the threshold

[8] In *Exergen*, Defendants alleged that Exergen had the opportunity and obligation to disclose the relevant prior art because "Exergen was aware of the '808 patent and the '998 patent prior to the issuance of the '685 patent" and because they were "material to the patentability of the '685 patent." *Exergen*, at *10. The court held that the pleading was factually deficient because it "provides no factual basis to infer that any specific individual, who owed a duty of disclosure in prosecuting the '685 patent, knew of the specific information in the '808 and '998 patents that is alleged to be material to the claims of the '685 patent." *Id.* at *13.

level of deceptive intent required to support an allegation of inequitable conduct." *Exergen*, *15. Second, the failure to cite Power Integrations' '876 and '366 patents in the earlier co-pending '079 patent, which is entirely unrelated to the '972 patent, is irrelevant to the inequitable conduct claim against the '972 patent and pleadings pertaining to that allegation should be stricken for that reason alone. Fed. R. Civ. P. 12(f) ("[a] court may order stricken from any pleading any insufficient defense or any redundant, immaterial, impertinent, or scandalous matter."). Third, Mr. Yang's alleged failure to provide to Finnegan all Yang and SG patents, published applications, or any other prior art does not constitute a prima facie case of inequitable conduct. Mr. Yang's knowledge of these prior art references does not amount to knowledge of the specific information within the references that may be material to the prosecution of the '972 patent, or an awareness of the alleged materiality of such information. Mr. Yang does not have a duty to disclose these references without knowledge that they contain material information.

Power Integrations also alleged that Fairchild made misleading assertions during the prosecution of the '972 patent. When Mr. Yang, through his patent counsel at Finnegan, represented to the PTO that "none of the cited references discloses such features," (plural) he was referring not to "frequency hopping" alone, but to the features including "generating a frequency-hopping signal switching signal" and "generating a digital pattern for use in generating the frequency-hopping signal." Ex. F, '972 Patent, April 30, 2007 Office Action Response at 19. This representation is neither misleading nor false, since the record before the PTO at that time does not disclose these features. Power Integrations did not provide any facts that, at the time of the allegedly false assertions, the individual who made this statement was aware of the specific information found in the references alleged to be material to the patentability of the '972 patent. The court in *Exergen* has stated that "[t]he mere possibility that material information may exist will not suffice to give rise to a duty to inquire; sufficient information must be presented to the attorney to suggest the existence of specific *information[,]* the *materiality* of which may be ascertained with reasonable inquiry." *Exergen*, at *14 (quoting *Brasseler, U.S.A. I, L.P. v. Stryker Sales Corp.* 267 F.3d 1370, 1382 (Fed. Cir. 2001). Again,

Mr. Yang does not have a duty to disclose cumulative or irrelevant prior art references simply because he is aware of their existence. Power Integrations must present factual evidence that he knew of the materiality of these references.

Power Integrations' allegation with regard to Mr. Yang's testimony about why the Yang patent was prosecuted by Finnegan and why Power Integrations patents and products were not disclosed is not evidence of inequitable conduct. Mr. Yang testified that he could not recall why a different law firm was used or why certain patents or products were not disclosed. D.I. 144 ¶ 80. This testimony does not identify "the specific who, what, when, where, and how of the material misrepresentation or omission" or provide the underlying facts for the Court to reasonably infer knowledge and intent to withhold material information.

Similar to the pleading of the '595 and '780 patent, Power Integrations' inequitable conduct allegations with respect to the '972 patent are inadequately pled. Because the insufficiency of the affirmative defense is "clearly apparent," and Power Integrations has not stated "a claim to relief that is plausible on its face," the Court should grant Fairchild's motion to strike and dismiss the pleadings of inequitable conduct with respect to the '972 patent. *See Symbol Technologies*, 609 F.Supp.2d at 356; *Bell Atl. Corp.*, 550 U.S. at 570.

4. The Alleged Inequitable Conduct in the Prosecution of the '972 Patent is not Relevant to the '780 or '595 Patents

Finally, Power Integrations asserts that the alleged inequitable conduct occurring during prosecution of the '972 patent infects the '780 and '595 patents and thus also renders those patents unenforceable. D.I. 144 ¶¶ 93, 104. This is legally wrong because the '780 and '595 patents did not issue from the same parent application as the '972 patent, and do not belong to the same patent family.

In *Consolidated Aluminum Corp. v. Foseco Int'l Ltd.*, the Federal Circuit ruled that inequitable conduct in the prosecution of one patent may possibly render ***related continuation patents*** unenforceable where there is an "immediate and necessary relation" between the alleged

inequitable conduct and enforcement of the related patents. 910 F.2d 804 (Fed. Cir. 1990). Since *Consolidated Aluminum*, the Federal Circuit has repeatedly stated that the doctrine of "infectious unenforceability" applies to related patents. *Fox Indus., Inc. v. Structural Pres. Sys., Inc.*, 922 F.2d 801, 803-04 (Fed. Cir. 1990) (a breach of the duty of candor early in the prosecution ***may*** render unenforceable all claims which eventually issue from the ***same or a related application***) (emphases added); *Baxter v. McGaw*, 149 F.3d 1321, 1332 (Fed. Cir. 1998) (where inequitable conduct in the prosecution of a ***parent patent*** relates only to the claims covered by one ***divisional patent***, unenforceability does not extend to other ***divisional patents*** that are unrelated to the conduct) (emphases added). In *Nilssen v. Osram Sylvania, Inc.*, the Federal Circuit again reiterated that "inequitable conduct with respect to one or more patents in a family can infect related applications." 504 F.3d 1223, 1230 (Fed. Cir. 2007).

The '972 patent is not related to either the '780 patent or the '595 patent. Although the subject matter of the patents is similar, "mere relatedness of subject matter is insufficient." *Consolidated Aluminum* at 810. Further, Power Integrations' allegations do not provide a basis for concluding that the alleged inequitable conduct in prosecuting the '972 patent had an "immediate and necessary relation" to either the '780 or '595 patents. Power Integrations provided no facts explaining how the references allegedly withheld during the prosecution of the '972 patent would be material to the specific claims of the '780 patent or the '595 patent and not cumulative to the information already of record during prosecution of those patents. Even taken in a light most favorable to Power Integrations, assertions regarding the overlap in subject matter of the patents do not satisfy the pleading requirements necessary to state a defense or claim of inequitable conduct.

C. Plaintiff's Fifth Affirmative Defense Should Be Stricken As a Matter of Law

Paragraph 60 of Power Integrations' Third Amended Answer asserts a defense of patent misuse: "SG's claims against Power Integrations are barred by SG's patent misuse." D.I. 144 ¶ 60.

REDACTED

REDACTED

The Federal Circuit has held that "[i]t is not patent misuse to bring suit to enforce patent rights not fraudulently obtained." *C.R. Bard, Inc. v. M3 Sys., Inc.*, 157 F.3d 1340, 1373 (Fed.Cir. 1998). The court in *C.R. Bard* overturned the jury verdict of patent misuse based on defendant's charge that plaintiff "was attempting to enforce the patents against goods known not to be infringing." *Id.* In a recent case in the Western District of Washington, the defendants alleged that "plaintiffs knew or should have known that defendants' process does not infringe the [patent in suit] and that plaintiffs are seeking to broaden the scope of the patent through this enforcement action." *Pace Intern., LLC v. Industrial Ventilation, Inc.*, 2009 WL 2460999, *1 (W.D. Wash. 2009). Citing *C.R. Bard*, the court ruled that "[b]ecause the Federal Circuit has determined that allegations of wrongful enforcement are insufficient to establish patent misuse, defendants' fourth affirmative defense is insufficient and fails to state a defense upon which relief can be granted." *Id.*

Similar to the facts in *C.R. Bard* and *Pace Intern*, Power Integrations' allegations are based upon the theory of wrongful enforcement, without any evidence of actual "misuse" of the counterclaim patents. As such, Power Integrations' patent misuse defense is insufficient and should be stricken.[9]

[9] Power Integrations has not cited – and Fairchild is not aware of – any cases suggesting that alleged inequitable conduct will also give rise to a misuse claim. If Power Integrations can prove inequitable conduct by clear and convincing evidence, the patent would be rendered unenforceable and a misuse claim based on inequitable conduct would be redundant.

D. Power Integrations' Fifth and Eighth Affirmative Defenses, and Seventh, Eighth, and Ninth Counterclaims Should be Stricken and Dismissed With Prejudice

Power Integrations has already amended its answer and counterclaims three times in an effort to plead inequitable conduct and is still unable to do so. Also, Power Integrations had many opportunities to conduct discovery for its inequitable conduct allegations. For example, Power Integrations deposed Mr. Yang, the inventor of the '972, '780, and '595 patents, in June of this year. Recently, on September 9, 2009, Power Integrations also deposed J.C. Patents' Mr. Huang. In addition, while Power Integrations was preparing its pleadings with respect to the inequitable conduct allegations, Fairchild communicated via several letters explaining in detail that the amended pleadings were inadequate and failed to meet the standard set forth in the new *Exergen* decision. Exs. B, C. Because Power Integrations has had plenty of opportunity to obtain evidence to support its inequitable conduct claims and still is not able to satisfy the requirements under Rule 9(b), the Court should grant Fairchild's motion with prejudice.

IV. CONCLUSION

For all the reasons stated above, Defendants respectfully request that their motion to strike or dismiss be granted, that Plaintiff's affirmative defenses of unenforceability as a result of alleged inequitable conduct be stricken from the pleadings pursuant to Rule 12(f) and that Plaintiff's counterclaims for declaratory judgment of unenforceability be dismissed pursuant to Rule 12(b)(6).

ASHBY & GEDDES

/s/ John G. Day

John G. Day (I.D. 2403)
Lauren E. Maguire (I.D. 4261)
Andrew Cordo (I.D. #4534)
500 Delaware Avenue, 8th Floor
P.O. Box 1150
Wilmington, DE 19899
(302) 654-1888
jday@ashby-geddes.com
lmaguire@ashby-geddes.com
acordo@ashby-geddes.com

Attorneys for Defendants

Of Counsel:

Orrick, Herrington & Sutcliffe LLP
G. Hopkins Guy, III
Vickie L. Feeman
Bas de Blank
Ulysses Hui
1000 Marsh Road
Menlo Park, CA 94025
(650) 614-7400

EXHIBIT A

From: de Blank, Bas
Sent: Tuesday, August 04, 2009 8:36 AM
To: Michael Headley; JDay
Cc: FSC_SG_POWI OHS ALL; William Marsden; Kim Kilby; LMaguire
Subject: RE: PI/FCS II -- amended answer/counterclaims on inequitable conduct

Michael,

We do not oppose Power Integrations' efforts to amend its answer and plead additional defenses and counterclaims since this is before the deadline set by the Court. To be clear, we strongly dispute the allegations set forth and do not agree that Power Integrations has adequately pled the issues. We will respond, however, to the pleading as appropriate rather than require Power Integrations to first receive leave to file the amended answer.

We are surprised and disappointed that Power Integrations would not agree to extend the same courtesy to Fairchild. We hope that you will change your position if and when Fairchild seeks to amend its pleadings.

Bas

From: Michael Headley [mailto:Headley@fr.com]
Sent: Tuesday, July 28, 2009 4:53 PM
To: de Blank, Bas; JDay
Cc: FSC_SG_POWI OHS ALL; William Marsden; Kim Kilby
Subject: RE: PI/FCS II -- amended answer/counterclaims on inequitable conduct

Bas,

We cannot prospectively agree that you can amend unless we know what you're proposing. We will, of course, meet and confer in good faith to consider any reasonable proposal you make regarding amendment, and we would be happy to consider such a proposal now if you have something in mind.

Please let us know if this changes your view of our proposed amendment so that we can move forward.

Thanks.

Michael

From: de Blank, Bas [mailto:basdeblank@orrick.com]
Sent: Tuesday, July 28, 2009 11:53 AM
To: Michael Headley; JDay
Cc: FSC_SG_POWI OHS ALL; William Marsden; Kim Kilby
Subject: RE: PI/FCS II -- amended answer/counterclaims on inequitable conduct

Michael,

In an effort to avoid unnecessary litigation, we are willing to stipulate to the proposed amendment provided that Power Integrations will likewise agree that Fairchild may also amend its answer and counterclaims, if appropriate, prior to the Court's deadline. Please let me know.

Best Regards,

Bas de Blank

From: Michael Headley [mailto:Headley@fr.com]
Sent: Tuesday, July 28, 2009 11:16 AM
To: de Blank, Bas; JDay

Cc: FSC_SG_POWI OHS ALL; William Marsden; Kim Kilby
Subject: Re: PI/FCS II -- amended answer/counterclaims on inequitable conduct

Bas & John,

We haven't received any response to my inquiry of last week regarding our proposed amended answer and counterclaims -- please let us know whether you will consent or oppose our motion to amend so that we can get this wrapped up. We plan to file tomorrow if you do not consent or if we have not heard from you.

Thanks.

Michael

From: Michael Headley
Sent: Friday, July 24, 2009 10:41 AM
To: 'de Blank, Bas'
Subject: Re: PI/FCS II -- amended answer/counterclaims on inequitable conduct

Bas,

We have prepared an amended answer and counterclaims directed to inequitable conduct for the asserted Yang patents, and I am writing to determine whether you will consent or oppose our motion to amend and require us to brief the issue. I've attached the draft amendment reflecting the changes for your review; please let us know as soon as possible so that we can get this before the Court.

Thanks.

Michael

Michael R. Headley
Fish & Richardson P.C.
500 Arguello St., Suite 500
Redwood City, CA 94063-1526
(650) 839-5139 (direct)
(650) 839-5071 (fax)
****

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matter addressed herein.(FR08-i203d)
****

"EMF <orrick.com>" made the following annotations.

IRS Circular 230 disclosure:
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EXHIBIT B

ORRICK, HERRINGTON & SUTCLIFFE LLP
1000 MARSH ROAD
MENLO PARK, CALIFORNIA 94025-1015

tel +1-650-614-7400
fax +1-650-614-7401

WWW.ORRICK.COM

August 10, 2009

Bas de Blank
(650) 614-7343
bdeblank@orrick.com

VIA EMAIL

Michael R. Headley
Fish & Richardson P.C.
500 Arguello Street, Suite 500
Redwood City, CA 94063

Re: Power Integrations v. Fairchild Semiconductor et al.

Dear Michael:

Power Integrations sought to amend its pleadings in advance of the Court's August 21, 2009 deadline. Thus, as I indicated in my email of August 4, 2009, we did not require Power Integrations to file a formal motion to amend. As I made clear, however, we did not agree that Power Integrations' proposed amendment adequately pled inequitable conduct and reserved our right to respond to the pleading as appropriate.

That same day, the Federal Circuit issued its opinion in *Exergen Corp. v. Wal-Mart Stores, Inc.*, in which it held "that in pleading inequitable conduct in patent cases, Rule 9(b) requires identification of the specific who, what, when, where and how of the material misrepresentation or omission committed before the PTO." Power Integrations' amended pleadings fail to meet this standard – indeed, the pleadings violates several of the bright line rules set forth by the Federal Circuit.

Thus, we formally request that Power Integrations withdraw its allegations of inequitable conduct. If not, we will have no choice but to move to dismiss or strike them. Please let me know your position as soon as possible. If you wish to discuss this or should you have any questions, please do not hesitate to call.

Sincerely,

Bas de Blank

cc: William J. Marsden, Jr.
Howard G. Pollack

EXHIBIT C

ORRICK, HERRINGTON & SUTCLIFFE LLP
1000 MARSH ROAD
MENLO PARK, CALIFORNIA 94025-1015
tel +1-650-614-7400
fax +1-650-614-7401
WWW.ORRICK.COM

August 12, 2009

Bas de Blank
(650) 614-7343
bdeblank@orrick.com

VIA EMAIL

Michael R. Headley
Fish & Richardson P.C.
500 Arguello Street, Suite 500
Redwood City, CA 94063

Re: Power Integrations v. Fairchild Semiconductor et al.

Dear Michael:

Thank you for your letter of August 11, 2009. While we believe that the deficiencies in Power Integrations' pleadings of inequitable conduct are apparent on its face, we accept your offer of a one week extension to respond to the amended pleadings with the hope that the parties will be able to resolve the matter without involving the Court. Enclosed is a draft stipulation to that effect. Please confirm that this is acceptable and we will take care of filing it.

As we previously explained, in *Exergen Corp. v. Wal-Mart Stores, Inc.* the Federal Circuit set clear guidelines as to the heightened pleading requirements for inequitable conduct. "A pleading that simply avers the substantive elements of inequitable conduct, without setting forth the particularized factual bases for the allegations, does not satisfy Rule 9(b)." *Exergen*, 2006-1491 at *21 (Fed. Cir. Aug. 4, 2009). Equally important, the Federal Circuit specifically identified what does ***not*** constitute sufficient pleading. Power Integrations' amended response clearly falls in the latter category. While I will not attempt to identify each of the numerous deficiencies in Power Integrations' pleadings, at your request I will identify some of the particularly glaring examples.

For instance, the Federal Circuit held that general allegations that a company "its agents and/or attorneys" committed inequitable conduct is inadequate. This, however, is precisely what Power Integrations has done. *See, e.g.*, Amended Answer, ¶ 51 ("one or more of the named inventors, attorneys, agents, or others responsible for prosecution" engaged in inequitable conduct). Indeed, Mr. Yang is the only individual named in the inequitable conduct allegations, and that is always in conjunction with unnamed actors from Finnegan, SG, JC Patents or others.

Furthermore, the Federal Circuit has held that "pleadings [that] fail[] to identify which claims, and which limitations in those claims, the withheld references are relevant to, and where in those reference the material information is found" are inadequate. *Exergen* 2006-1491 at *26. Power Integrations amended counterclaims fail to provide such information. For example, with respect to the '595 patent, Power Integrations does not even identify a claim to which the allegedly relevant supposedly withheld information could be even potentially material. With respect to the '780 and '972 patents, Power Integrations fails to identify where in the references material information allegedly relevant to any claim is found.

As in the pleading rejected by the Federal Circuit in *Exergen*, Power Integrations' amended "pleading states generally that the withheld references are 'material' and 'not cumulative to the information already of record,' but does not identify the particular claim limitations, or combination

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of claim limitations, that are supposedly absent from the information of record." *Exergen* 2006-1491 at *26. "Such allegations are necessary to explain both 'why' the withheld information is material and not cumulative, and 'how' an examiner would have used this information in assessing the patentability of the claims." *Id.* Thus, Power Integrations' allegations are defective.

Further, Power Integrations' amended pleadings fail to adequately plead the requisite intent. Indeed, Power Integrations repeatedly alleges that unnamed individuals merely "should have known" of unidentified information for allegedly withheld references and that this may amount to "gross negligence". This is inadequate because "the circumstances that [Power Integrations] has alleged, even if true, do not plausibly suggest any 'deliberate decision to withhold a known material reference' or to make a knowingly false misrepresentation – a necessary predicate for inferring deceptive intent." *Exergen* 2006-1491 at *29.

Rather than identify facts related to a supposedly wrongful intent on behalf of an identified individual, Power Integrations relies upon speculation based on the fact that various prior art references were identified in other SG patent applications. The Federal Circuit has rejected this approach. "The mere fact that an applicant disclosed a reference during prosecution of one application, but did not disclose it during prosecution of a related application, is insufficient to meet the threshold level of deceptive intent required to support an allegation of inequitable conduct." *Exergen* 2006-1491 at *29.

As explained above, this is hardly an exhaustive list of the deficiencies in Power Integrations' amended pleadings. This is, however, a more than adequate basis to establish that Power Integrations has not pled inequitable conduct as required under the law. Moreover, having completed the deposition of Tom Yang, it is clear that there has been no inequitable conduct. Thus, we repeat our request that Power Integrations withdraw its amended pleading immediately. Should you refuse to do so, we will have no choice but to move the strike or dismiss it. Please let me know your position as soon as possible. Please do not hesitate to call should you have any questions.

Sincerely,

Bas de Blank

Encl.

cc: William J. Marsden, Jr.
Howard G. Pollack

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

POWER INTEGRATIONS, INC., Plaintiff, v. FAIRCHILD SEMICONDUCTOR INTERNATIONAL, INC., FAIRCHILD SEMICONDUCTOR CORPORATION, and SYSTEM GENERAL CORPORATION, Defendants.	)	C.A. No. 08-309-JJF-LPS

STIPULATED ORDER

IT IS HEREBY STIPULATED AND AGREED, subject to the approval and order of the Court, that the deadline by which defendants Fairchild Semiconductor International, Inc., Fairchild Semiconductor Corporation and System General Corporation must answer, move, or otherwise respond to Plaintiff's Amended Answer to Defendants' Counterclaims and Plaintiff's Amended Counterclaims on Reply (D.I. 117) in the above action is extended through and including August 31, 2009.

FISH & RICHARDSON P.C.

/s/

William J. Marsden, Jr. (I.D. #2247)
Kyle Wagner Compton (I.D. #4693)
919 Market Street, Suite 1100
P.O. Box 1114
Wilmington, DE 19801
(302) 652-5070
marsden@fr.com
kcompton@fr.com

Attorneys for Plaintiff

ASHBY & GEDDES

/s/

Steven J. Balick (I.D. #2114)
John G. Day (I.D. #2403)
Lauren E. Maguire (I.D. #4261)
500 Delaware Avenue, 8th Floor
P.O. Box 1150
Wilmington, DE 19899
(302) 654-1888
sbalick@ashby-geddes.com
jday@ashby-geddes.com
lmaguire@ashby-geddes.com

Attorneys for Defendants

SO ORDERED this _____ day of _____, 2009.

United States Magistrate Judge

EXHIBIT D

FISH & RICHARDSON P.C.

500 Arguello Street
Suite 500
Redwood City, California
94063-1526

Telephone
650 839-5070

Facsimile
650 839-5071

Web Site
www.fr.com

Michael R. Headley
(650) 839-5139

Email
headley@fr.com

VIA E-MAIL

August 13, 2009

Bas de Blank
Orrick, Herrington & Sutcliffe LLP
1000 Marsh Road
Menlo Park, CA 94025

Re: *Power Integrations v. Fairchild II*
USDC-D. Del. - C.A. No. 08-309 JJF-LPS

Dear Bas:

We have reviewed your letter of August 12 regarding Power Integrations' inequitable conduct claim, and we disagree with your reading of *Exergen* – we believe our pleading more than satisfies the requirements to state an inequitable conduct claim. Although you criticize our pleading, your complaints instead appear to be directed to your dispute as to whether we will ultimately prevail on the claim. For example, your letter recognizes (even if only implicitly) that we have identified: the specific people who intentionally withheld known material art (Mr. Yang, in connection with colleagues and counsel who have yet to be deposed); what that withheld material art is; which specific features of the withheld art are material; which claims the material references anticipate (something we already identified in our detailed invalidity contentions months ago); and which facts demonstrate that the material art was knowingly withheld with the intent to deceive, including not only Mr. Yang and his colleagues' course of conduct in selectively withholding known material art during prosecution, but also their misleading representation of the prior art during prosecution in an effort to obtain patent claims they knew Power Integrations' own prior work would invalidate.

Despite the fact that we see nothing deficient in our pleading, we are willing to provide a proposed further amended Answer and Counterclaims in an effort to reach a compromise and avoid another needless Fairchild motion attacking the pleadings. We anticipate being able to provide the proposed amended pleading for you on Friday, but in any event we consent to your filing the joint stipulation you provided to extend the deadline for you to respond to our current amended answer and counterclaims up through August 31. Please let me know if you have any questions.

Sincerely,

Michael R. Headley

EXHIBIT E

Effects of Switching Frequency Modulation on EMI Performance of a Converter Using Spread Spectrum Approach

M. Rahkala
Electrical Engineering Department
Rovaniemi Polytechnics
FIN-96300 Rovaniemi, Finland

T. Suntio
Electronics Laboratory
University of Oulu
P.O. Box 4500
FIN-90014 Oulu, Finland

K. Kalliomäki
Measurement Technology Laboratory
University of Oulu
P.O. Box 4500
FIN-90014 Oulu, Finland

Abstract – **A novel approach to simulate the EMI emissions comparable to EMC standards (CISPR 16/22) from the point of view of average (AV) and quasi-peak (QP) detection are presented. In addition an algorithm to convert the high-resolution FFT data to correspond with the defined measurement bandwidths is presented. A homodyne receiver approach was found to be useful for modeling the frequency selective process of EMI measurement equipment. The developed methods can be effectively used to study the effect of spread-spectrum technique to reduce EMI emissions. It was noticed that in order to optimize EMI in respect to AV detection a low frequency jittering is optimal. From a QP detection point of view it is favorable to apply a modulation frequency in the order of the same magnitude as the measurement of the bandwidth demanded.**

I. Introduction

Electromagnetic interference (EMI) is one of the main adverse effects of switching power supplies, which is strictly regulated both nationally and internationally [1]. The EMI is caused by the pulsating currents and rapidly changing voltages with high-frequency ringing inside a power supply, which by themselves or via the circuits parasitic capacitors as in differential-mode (DM) or common-mode (CM) currents may escape the equipment, and cause EMI compliance problems [1,2,3]. The EMI problems may be reduced or totally eliminated by using proper EMI suppression filters, reducing the parasitic capacitors, optimizing circuit layouts, etc. [2]. The repetition of these efforts may be questionable e.g. due to variations in construction or material properties of magnetic components, or assembly of EMI capacitors, etc., causing changes in parasitic elements, and consequently reduction in expected EMI performance.

Many power supply designers know from experience that the varying of the switching frequency e.g. in the boundary-mode operated boost-type converter results in improvement in EMI performance as also reported in [4]. Commercial products have been developed such as [5-7] in which the frequency modulation is used and claimed to reduce EMI noise. Research on this subject was intensified in the 90's [3,9-17] although the functional ability of spread spectrum technique in power electronics applications was already recognized earlier as in [8].

Several methods have been proposed based on deterministic or non-deterministic [8-17] methods to modulate the switching frequency of a converter in order to spread the spectrum of the switching frequency and its harmonics to reduce EMI, and make the EMC compliance easier to achieve. A reduction of 5-10 dB in EMI noise level is typically reported to be achievable by using different approaches to modulate the switching frequency [9-14]. It is claimed in [5-7] that EMI noise can be reduced both in the AV and QP sense at the same time by about 5-10 dB by using frequency jittering. The claims are controversial, because there are significant differences in the presented modulation frequencies and its deviation (i.e., 1 kHz and 8 kHz in [5], 1 kHz and 5 kHz in [6], 250 Hz and 8 kHz in [7]) using the same switching frequency of 132 kHz.

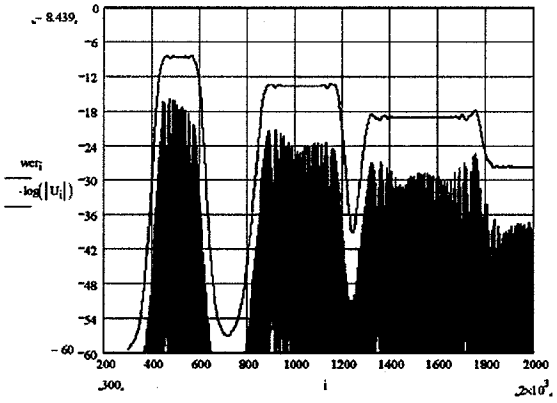

Fig.1. Effects of RWB on the simulated EMI spectrum. The upper curve corresponds to RBW of 9 kHz, and the lower curve to RBW of 195 Hz.

The non-deterministic modulation schemes have proven to be far superior to deterministic schemes [12,13]. The claim is proven by measurements, which show a substantial reduction in peak spectral levels. The measurement or resolution bandwidth (RBW) is not defined [12] or a very narrow RBW e.g. 300 Hz is used [13], which does not comply to the RBW used in EMC compliance testing (CISPR 16/22; 9 kHz, f > 150 kHz [20]). The measured signal spectrum is, however, significantly dependent on the used RBW, because the spectrum corresponds to the sum of the squared spectral line voltages within the RBW [18], and not just to an individual spectral line. The narrow RBW may result in significant overestimation of the achievable EMI

0-7803-7404-5/02/$17.00 (c) 2002 IEEE

noise reduction. This can be seen in Fig.1, where the spectral content of a certain signal is shown using RWB of 195 Hz and 9 kHz. The same problem can also be noticed e.g. in [10,13], which makes the presented conclusions questionable. The non-deterministic modulation schemes may be effective in reducing discrete harmonics but may not be as effective in reduction of wider bandwidth noise as is also clearly stated in [19]. None of the presented papers clearly address the practical situation where the compliance should be achieved both using AV and QP detection. Our opinion is that certain modulation can reduce EMI in the QP sense but does not have the same effect or may have adverse effects on the AV level or vice versa

We present in this paper an effective analysis and simulation method, which can be used to compare the effects of different modulation approaches on the reduction of EMI noise levels in respect to AV and QP detection methods. Several different approaches were considered but it turned out that a method based on the use of zero-intermediate-frequency approach or a homodyne receiver principle [21] results in the most effective simulation set-up. It was noticed that an effective reduction of AV levels requires the use of low modulation frequency in the order of 250–500 Hz, and to effectively reduce the QP levels a modulation frequency in order of RBW has to be used, respectively. An analog circuit simulator such as Pspice was used as a simulation medium.

Analog simulators are normally provided with Fast Fourier Transformation (FFT) capability to study the spectral content of associated signal waveforms. The resulting spectral lines are obtained using low-measuring bandwidth, and are therefore, not directly applicable to evaluate the effect of frequency modulated (FM) signals to EMI performance due to substantial differences in RBW. An algorithm to convert the FFT data to correspond with the measurement RBW is also presented, which enables the use of the data in evaluating the effect of a certain modulation scheme on the EMI performance in the AV detection sense. The FFT information cannot be typically used to predict the QP levels due to the lack of information of the amplitude variation during a measurement cycle.

The paper is organized as follows. The implications of the compliance (i.e., CISPR 16/22) measurement are discussed in Section II. The used simulation method is introduced in Section III, and validated using experimental data in Section IV. The conclusions are finally drawn in Section V.

II. Implications Of EMI Compliance Measurement

From the simulation point of view, there are two distinct problems – namely the effect of RBW, and QP detection, which are specially dealt with in this paper. The compliance measurement standards (CISPR 16) [20] define that the interference signals have to be measured using a certain band pass filter and a detector response depending on the frequency band of interest. The band pass filter is defined by means of its – 6dB-bandwidth (RBW). The shape of the band pass filter is described in CISPR 16, ANNEX A. The equivalent low pass approximation of intermediate filter $H_{Lowpass}(\omega)$ is expressed in (1) and shown in Fig. 2.

$$H_{Lowpass}(\omega) = \left[2 \cdot \frac{\omega_0^{\,2}}{(\omega_0 + j\cdot\omega)^2 + \omega_0^{\,2}} \right]^2 \qquad (1)$$

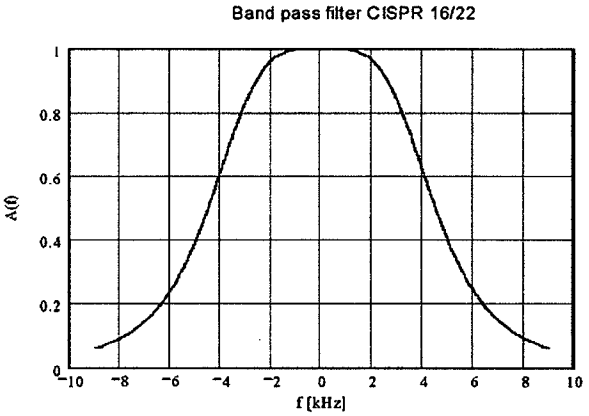

Fig. 2. Intermediate filter (IF) response.

The conducted EMI emissions are typically measured in the frequency band from 0.15 MHz to 30 MHz using a band bass filter having bandwidth of 9 kHz, a QP detector having 1 ms and 160 ms charge and discharge time constants, and an AV detector with 100ms charge/discharge time constant, respectively [20]

It is well known that the analog simulators can calculate the spectral content of a signal using Fourier transformation technique (FFT). The spectrum levels are dependent on RWB, if the signal under study contains a fine structure. In the case of FM modulation, the peak level of the spectrum is significantly dependent on the RBW applied. Therefore FFT cannot be used directly to predict the EMC compliance level. It is known that a FFT transformation can be adapted to a specific RBW by means of a simulation time span T_{span} in such a way that the RBW = $1/T_{span}$. [22] In the case of 9 kHz RBW, this means that $T_{span} \approx 111$ µs. The required simulation time is, however, absolutely too short to record the signals typically used in the spread spectrum technique.

Another problem is related to the prediction of QP response: The FFT transformation gives information on the mean amplitude at a specific frequency but none on how the signal amplitude may vary during the simulation time, T_{span}. The nature of the amplitude behavior has a significant effect on the response of the QP detector as demonstrated e.g. in [20]. Therefore, FFT transformation is not suitable for predicting the effect of a specific modulation scheme on EMI performance using the QP detection.

The AV detection does not pose the same difficulties, and therefore the high-resolution FFT transformations can be

used for spectral voltage and power predictions, after they are converted to the required measurement RBW. This can be done by computing the weighted sum of the original FFT spectral voltages (lines) $VFFT_i$ according to (2), where VIF_i, denotes the EMI receiver amplitude response with an applied (coarse) intermediate frequency filter. The Integer index i corresponds to the discrete values in FFT transformation. $f = i \times \Delta f$, where $\Delta f = 1/Tspan$. The number of terms (i.e., k), here 61, must be sufficient to define the band pass filter.

$$VIF_i = \sqrt{\sum_{k=0}^{60} \left[\left| a_k \cdot VFFT_{(i+k-30)} \right| \right]^2} \quad (2)$$

The group of the coefficients, a_k can be calculated using (3), where $H_{Lowpass}$ is defined in (1). k is an integer variable and Δf is the resolution band width applied to FFT. Corresponding response curve a_k is equal to the curve shown in Fig. 2. The last coefficient a_{60} equals to f = 11720 Hz (i.e., stop band).

$$a_k = \left| H_{Lowpass}\left[(k-30) \cdot 2 \cdot \pi \cdot \Delta f \right] \right| \quad (3)$$

III. Simulation Method

The methods used in this paper are intended for the prediction of EMI behavior of a switched-mode converter exposed to different switching-frequency-modulation schemes. An exact model of a converter is not required here or even recommended for studying the spreading of the spectrum. The essential idea is that the switching elements and the dominant stray capacitances (e.g., C_1 and C_2 in Fig. 3) are included. The input and output voltages can be replaced by a DC source. The simulation model of a practical flyback converter is shown in Fig. 3 including the input resistance of the line-impedance-stabilizing network (LISN) as $R_{Receiver}$.

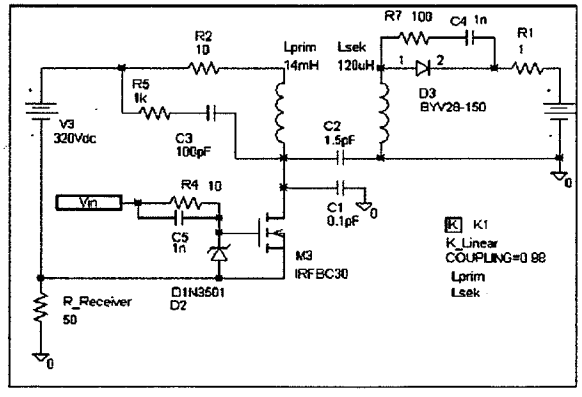

Fig. 3. A simulation model of a practical flyback converter. *R_Receiver* and C_1, C_2 denote the LISN input resistor, and stray capacitances, respectively

The overall simulation set-up contains in addition to the model of LISN and a switch-mode converter, the model of a pulse oscillator forming the gate signal for the converter switching device M_3, and an EMI receiver including AV and QP detectors. The pulse oscillator is shown in Fig. 4, where the modulating voltage source (VLF) is controlled by using an external data file, which basically contains one cycle of the jittering waveform. The same data file can also be used to make laboratory experiments using an arbitrary waveform generator e.g. HP 33120A, and an authentic converter suitably modified.

Use of analog behavioral models (ABM) instead of normal circuit models for the FM modulated pulse oscillator significantly reduces the required simulation time. The model is formed by using sinus function (4), and SGN function. f_s is the switching frequency of a converter, VRF and VFM are the outputs of the sine function and SGN blocks, respectively.

$$VRF = A \cdot \sin\left(\omega \cdot t + \int_0^t VLFdt \right) \quad (4)$$

The purpose of the SNG, (*signum*) function is to transform the sine signal to a proper square wave. Duty cycle and DC-offset control are carried out by means of two constants as seen in fig. 4.

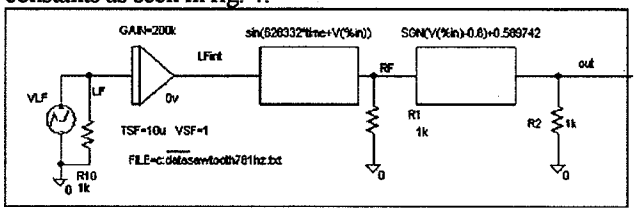

Fig. 4. An analog behavioral model of an FM modulated pulse oscillator.

The use of a direct time domain approach to simulate the IF filter of the EMI receiver led to several problems such as deteriorated accuracy and difficulties to tune the center frequency for individual measurements. The accuracy problem can be solved, in theory, by decreasing the relative tolerance value options of the simulator set up, but this can easily result in severe converging problems. It was found that a more useful approach is to use the receiver architecture known as the homodyne receiver shown in Fig. 5 [21]. In the homodyne receiver approach, the frequency band of interest will be shifted to zero frequency by means of quadrature local oscillators (i.e., V_{Re} and V_{im} in Fig. 5). An equivalent IF filter can be obtained by using a second-order low-pass filter, which has a bandwidth of half the required RBW of the corresponding EMI receiver. The final IF output signal (U_{RBW} in Fig. 5) can be obtained by squaring the output signals of the low-pass filters, and taking the square root of the sum of the squared signals as shown in Fig. 5. Tuning the receiver to the frequency of interest is easily managed by setting the local oscillators V_{Re} and V_{im}.

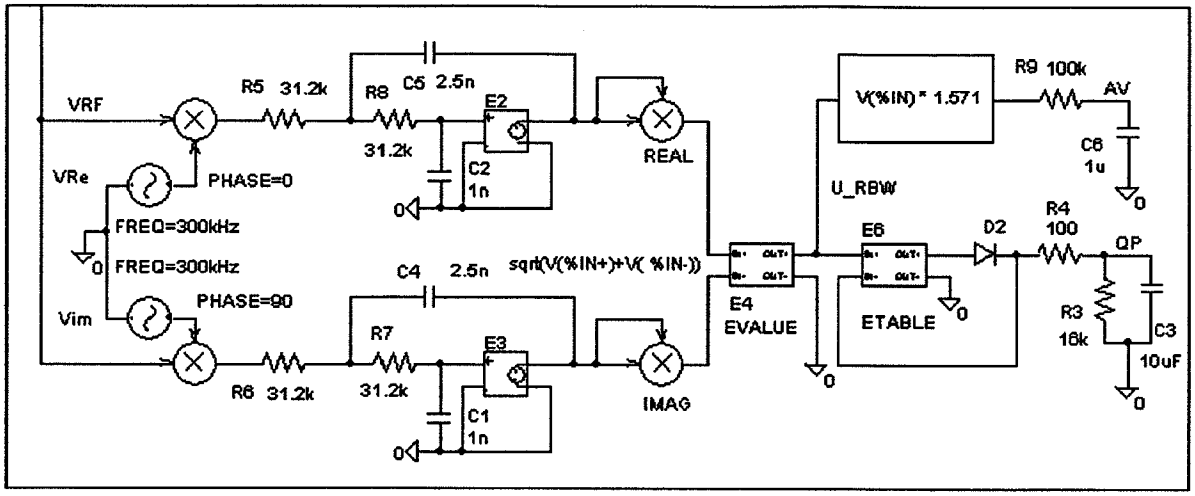

Fig. 5. An EMI homodyne receiver with AV and QP detectors.

The QP detector is constructed according to the defined charge/discharge time constants (i.e., 1 ms vs. 160 ms [20]) using accurate rectifier circuitry (E6), and a resistor-capacitor network as shown in Fig. 5. The AV detector is constructed filtering the IF signal U_RBW by means of a first-order filter with a time constant of 100 ms, respectively. The output signal of the AV has to be multiplied by a factor of $\pi/2$ in order to maintain the equality to the QP output as stated in CISPR 16.

As a summary the simulation and/or computing methodology can be presented according to Fig. 6 showing the possible media for waveform generation, simulation, and practical measurement.

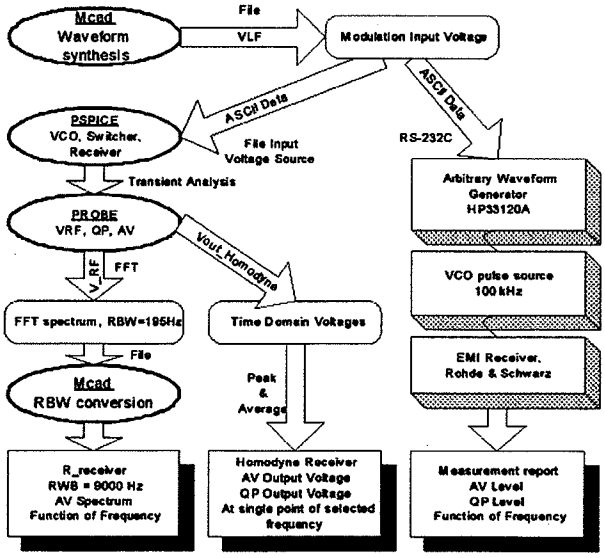

Fig. 6. A summary of the proposed simulation and verification scheme.

IV. Validation Of Method

The conversion of the high-resolution FFT to comply with the RBW is illustrated in the following figures: Fig 7 shows the FFT computation result of an FM modulating pulse oscillator having a 781 Hz triangle waveform. The period is deliberately set exactly to 1.28 ms. The simulation period, T_{span} is four times longer. Basically the carrier signal, 100 kHz, and its harmonic integer products, have a fine line spectrum of 781 Hz spaced around the center frequency. The extended simulation time (i.e, 4*1.28 ms) caused a four times finer spectral resolution of the FFT, namely 195 Hz. Therefore first three of the four successive frequency values are close to zero in the FFT spectrum. So, this spectrum is quite sparse. Our first impression of the results in Fig 7. is that the spectrum envelope is not as flat as would be desirable. This data was converted to the 9000 Hz RBW spectrum by using the method described in Section II. The FFT result is presented in Fig. 1. The recomputed result shows a surprisingly flat top spectrum. The small disturbances at the corner of the curve are known as "rabbit ear effect" [18].

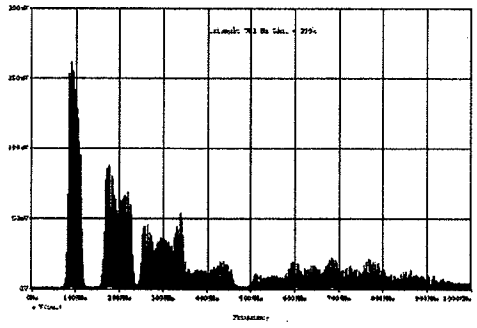

Fig 7. Spice simulator FFT spectrum of pulse source under the test.

The RBW conversion does not alter the voltage level of the original FFT, if there is no modulation. The difference can be 10 dB or more if the spread spectrum signal is applied. Fig. 8 visualizes this effect. Fine resolution FFT and the resolution conversion algorithm are applied to the gate steering pulse having narrow bandwidth FM modulation.

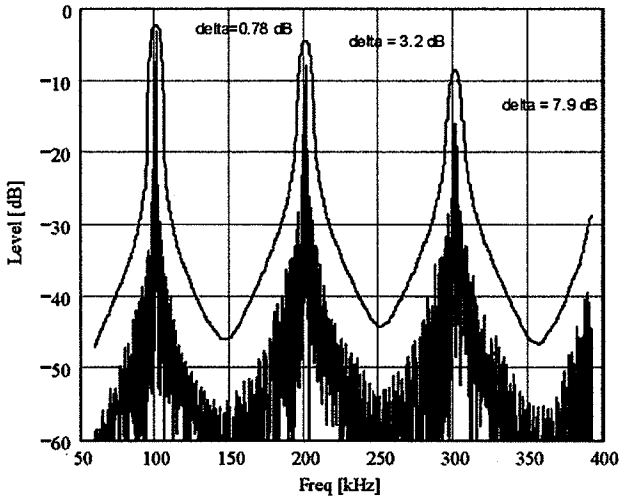

Fig. 8 SMPS switching signal with the first three harmonics components. Spectral results are illustrated before and after RBW conversion.

At the fundamental frequency there are no essential difference between narrow and wide bandwidth peak levels, only 0.78 dB. Because the frequency deviation increases with higher harmonics, the difference increases to 3.2 dB and 7.9 dB for consecutive harmonics. This clearly shows that the used RBW affects significantly the results. If the spectrum is not measured using correct RBW, the conclusions on possible effect on EMI may not be valid either.

QP detector response can only be simulated in time domain, as explained earlier. Calibration of the simulation model is done by using a known carrier input. This receiver model seems to be precise enough for most practical purposes.

Fig. 9 denotes the case, which is made by using the earlier mentioned 1.28ms triangle modulation as input for the simulator. The response of the homodyne receiver is shown in Fig. 9. The receiver is tuned to the third harmonic, i.e., 300 kHz. Steady state values of the QP and AV voltage levels are added in order to visualize them. One conclusion of this kind of simulation result is that the QP response depends on intermediate filter rise time; here it is in the order of 80 μs. Any slow moving signal through the pass band filter will raise the voltage of the IF-filter output to the maximum value. The peak detection circuit will give poor results because of this kind of momentary peak voltage as shown in Fig.9 In order to suppress QP level, the modulation rate must be relatively high.

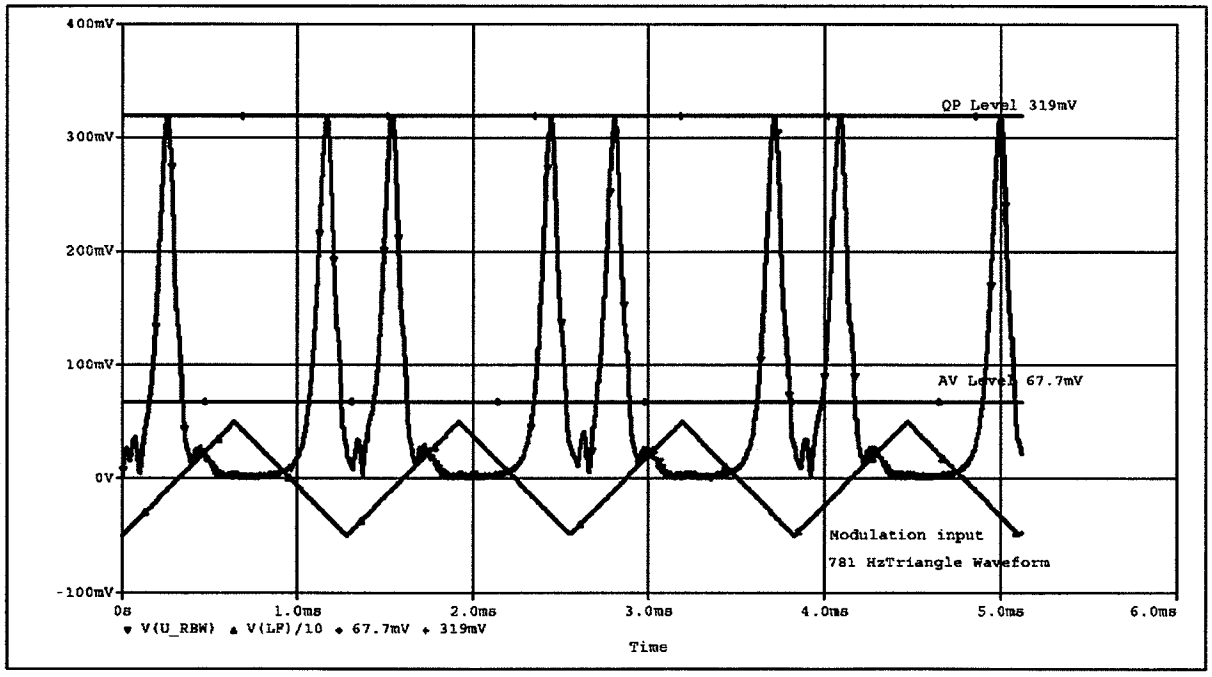

Fig. 9. A 781 Hz triangle FM modulated pulse signal and corresponding 3.th harmonics seen at the Homodyne receiver output.

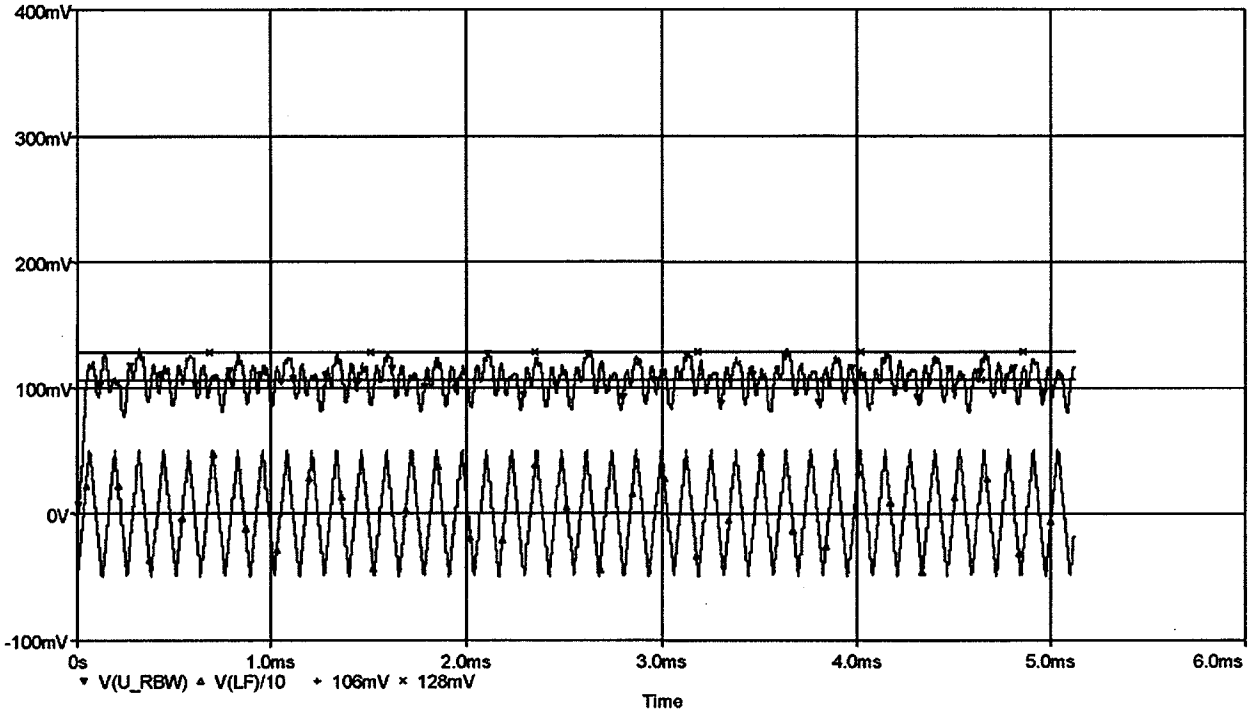

Fig. 10. The effect of high frequency triangle FM modulation of pulse signal and corresponding Homodyne receiver output.

As an example of application of this simulation capability is a comparing of the slow and fast triangle modulation rate effects on harmonics levels. As the modulation rate increases, (Fig. 10), the QP levels are decreased, but the AV levels are increased, respectively. Without use of modulation, the AV and QP levels are equal. When modulating frequency is increased from 781 Hz to 7812 Hz, the QP values changes from 319 to 128 mV, and the AV level from 68 mV to 106 mV, respectively. In the other words, the QP levels decreased by 7.93 dB but the AV level increased by 3.86 dB.

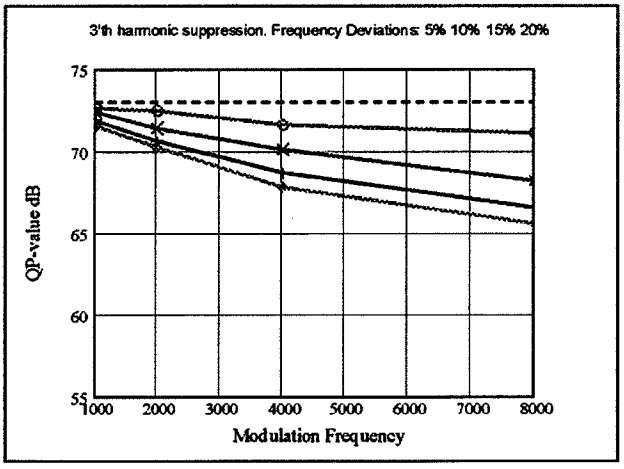

Fig. 11. Measured QP levels as function of the modulation rate and deviation.

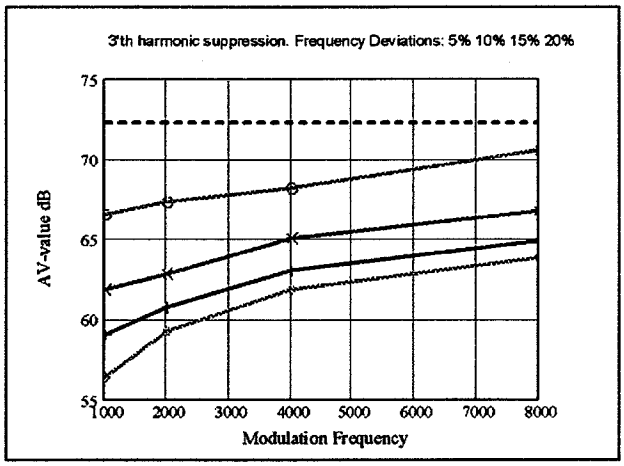

Fig. 12. Measured AV levels as function of the modulation rate and deviation.

The experimental results shown in Fig. 11 and 12 were taken using Rohde & Schwarz EMI Receiver. The dotted line on the top represents the non-modulated values. The topmost curves correspond to 5 % deviation on the each figure. The deviations are defined as related to the fundamental frequency.

V. Conclusions

The RBW conversion is a vital method with long run FFT analysis. It must be noted that this is not the same treatment as the well-known windowing method applied usually to FFT. Ordinary windowing is carried out by time domain, before the actual FFT transformation has taken place. The RBW conversion, described in this paper, is applied to the frequency data after the FFT transformation. The advantage of this method is obvious. Using this method it is possible to make long simulation runs, which are necessary in spread spectrum studies, and make the results compatible with the RBW stipulated by the EMI standards. The results show also that the reported EMI reductions may not be valid because the used RBW is typically much lower than the RBW stipulated by the EMI standards.

The use of zero-intermediate-frequency approach or a Homodyne receiver model turned out to be extremely effective resulting in accurate predictions without extra computing overhead. This approach made it possible to simulate also QP responses, which seems to be impossible with any other mean. It was also shown that quite a different modulation frequency has to be used to reduce EMI in QP sense than in AV sense: QP requires modulation frequency, which is in the order of RBW but AV is optimally reduced using 250-500 Hz modulation.

The future work will proceed with studying of the effect of non-deterministic modulation schemes on the EMI performance. The preliminary studies imply that the deterministic modulation schemes may give better results than the non-deterministic schemes. This is against the ideas reported earlier.

References

[1] R. Redl, "Electromagnetic environmental impact of power electronics equipment," *Proceedings of IEEE*, vol. 89, no. 6, 1994, pp. 926-938.

[2] M. K. W. Wu, C. K. Tse, "A review of EMI problems in switched mode power supply design," *Journal of Electrical and Electronics Engineers, Australia*, vol. 16, nos. 3 & 4, 1996, pp. 193-204.

[3] Q. Zhaoming, W. Xin, L. Zhengyu, M. H. Pong, "Status of electromagnetic compatibility research in power electronics," *IEEE PIEMC 2000 Record*, 2000, pp. 46-56.

[4] V. Grigore, J. Kyyrä, J. Rajamäki, "Input filter design for power factor correction converters operating in discontinuous conduction mode," *IEEE Int. Symposium on Electromagnetic Compatibility*, 1999, pp. 145-150.

[5] Data Sheet TNY256, Power Integration Inc.

[6] Data Sheet TNY264/266-268, Power Integration Inc.

[7] Data Sheet TOP242-249, Power Integration Inc.

[8] T. Tanaka, T. Ninomyiya, K. Harada, "Random-switching control in DC-to-DC converters," *IEEE PESC '89 Record*, 1989, pp. 500-507.

[9] A. C. Wang, S. R. Sanders, "Programmed pulsewidth modulated waveforms for electromagnetic interference mitigation in DC-DC converters," IEEE Trans. on Power Electronics, vol. 8, no. 4, 1993, pp.596-605.

[10] F. Lin, D. Y. Chen, "Reduction of power supply EMI emissions by switching frequency modulation," *IEEE Trans. on Power Electronics*, vol. 9, no. 1, 1994, pp. 132-137.

[11] M. Vilathgamuwa, J. Deng, K. J. Tseng, " EMI Suppression with switching frequency modulated dc-dc converters," *IEEE Industry Applications Magazine*, vol. 5, issue 6, 1999, pp. 27-33.

[12] S.Y. Hui, Y. Shrivastava, S. Sathiakumar, K.K. Tse, H. S-H. Chung, "A comparison of non-deterministic and deterministic switching methods for DC-DC power converters," *IEEE Trans. on Power Electronics*, vol. 13, no. 6, 1998, pp. 1046-1055.

[13] K. K Tse, H. S-H. Chung, S.Y. Hui, H. C. So, "Analysis and spectral characteristics of a spread-spectrum technique for conducted EMI suppression," *IEEE Trans. on Power Electronics*, vol. 15, no. 2, 2000, pp. 399-410.

[14] D. A. Stone, B. Chambers, D. Howe, "Easing EMC problems in switched mode power converters by random modulation of the PWM carrier frequency," *IEEE APEC '96 Record*, 1996, pp. 327-332.

[15] J. Paramesh, A. Jouanne, "Use of sigma-delta modulation to control EMI from switch-mode power supplies," IEEE APEC'99 Record, 1999, pp. 153-159.

[16] J.H.B. Deane, D.C. Hamill, "Inprovement of power supply EMC by chaos," *IEE Electronics Letters*, vol. 32, no. 12, 1996, p. 1045.

[17] R. Giral, A. El Aroudi, L. Martinez-Salamero, R. Leyva, J. Maixe, "Current control technique for improving EMC in power converters," *IEE Electronics Letters*, vol. 37, no. 5, 2001, pp. 274-275.

[18] C. R. Paul, " *Introduction to Electromagnetic Compatibility*," John Wiley & Sons, Inc. USA, 1992.

[19] A. M. Stankovic, G. C. Verghese, D. J. Perreault, "Analysis and synthesis of randomized modulation schemes for power converters," IEEE Trans. on Power Electronics, vol. 10, no. 6, 1995, pp. 680-693.

[20] T. Williams, " *EMC for Product Designers*," Newnes, Great Britain, 1996.

[21] P. Mannion, "Direct conversion prepares for cellular prime time," Electronic Design, vol. 47, Nov. 22, 1999, internet service.

[22] C. Basso, "Spice predicts differential conducted EMI from switching power supplies," *EDN-access*. 02.03.1997, internet service.

EXHIBIT F

PATENT
Customer No. 22,852
Attorney Docket No. 09578.0002-00

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	
Ta-yung YANG	Group Art Unit: 2838
Application No.: 10/959,188	Examiner: STERRETT, Jeffrey L.
Filed: October 7, 2004	Confirmation No.: 3800
For: PRIMARY-SIDE-CONTROL POWER CONVERTER HAVING A SWITCHING CONTROLLER USING FREQUENCY HOPPING AND VOLTAGE AND CURRENT CONTROL LOOPS	

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

REPLY TO OFFICE ACTION

In reply to the Office Action mailed October 30, 2006, the period for response having been extended to April 30, 2007, by a request for extension of three months and fee payment filed concurrently herewith, please amend the above-identified application as follows:

Amendments to the Claims are reflected in the listing of claims in this paper.

Remarks follow the amendment section of this paper.

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently amended) A power converter comprising:

a switch, responsive to a switching signal, to control electrical power in the power converter; and

a controller to generate the switching signal and to control the switching signal in response to a first feedback signal associated with a voltage control loop and a second feedback signal associated with a current control loop;

wherein the controller includes a pattern generator to generate a digital pattern and the controller uses the digital pattern for use in generating the switching signal as a frequency-hopping switching signal to the switch.

2. (Canceled)

3. (Canceled)

4. (Original) The power converter of claim 1, further comprising:

a transformer to transfer electrical power from a primary-side of the power converter to a secondary-side of the power converter, and wherein the switch is to switch the transformer.

5. (Original) The power converter of claim 4, wherein the transformer includes an auxiliary winding, a primary winding, and a secondary winding, and wherein the switch controls electrical power flowing through at least the primary winding.

6. (Original) The power converter of claim 5, wherein the controller generates the first feedback signal by sampling a voltage from the auxiliary winding of the transformer and a discharge time of the transformer.

7. (Original) The power converter of claim 6, further comprising:

a sense circuit to sense current through the primary winding of the transformer.

8. (Original) The power converter of claim 7, wherein the controller generates the second feedback signal by sampling of the sensed current from the sense circuit and the discharge time of the transformer.

9. (Original) The power converter of claim 8, wherein the discharge time of the transformer occurs while the switching signal is off.

10. (Original) The power converter of claim 4, wherein the current control loop limits the peak current flowing through the transformer.

11. (Original) The power converter of claim 10, wherein the current control loop controls an average value of a secondary-side current in the power converter.

12. (Original) The power converter of claim 5, wherein the voltage control loop limits the peak auxiliary voltage associated with the auxiliary winding.

13. (Currently amended) A method for regulating power in a power converter, comprising:

receiving electrical power from input terminals; ~~and~~

controlling a switching signal to regulate the connection of the electrical power to output terminals in response to a first feedback signal associated with a voltage control loop and a second feedback signal associated with a current control loop;

generating a frequency-hopping switching signal in order to reduce at least electro-magnetic interference (EMI); and

generating a digital pattern for use in generating the frequency-hopping switching signal.

14. (Canceled)

15. (Canceled)

16. (Currently Amended) The method of claim [[15]] 13, further comprising:

programming the digital pattern.

17. (Currently Amended) The method of claim [[14]] 13, further comprising:

passing electrical power from a primary-side to a secondary-side of a transformer based on the switching signal.

18. (Original) The method of claim 17, further comprising:

generating the first feedback signal by sampling a voltage from an auxiliary winding of the transformer and a discharge time of the transformer.

19. (Original) The method of claim 18, further comprising:

sensing a current through a primary winding of the transformer.

20. (Original) The method of claim 19, further comprising:

generating the second feedback signal by sampling of sensed current and the discharge time of the transformer.

21. (Original) The method of claim 20, wherein the discharge time of the transformer occurs when the switching signal is off.

22. (Original) A power converter comprising:

input terminals and output terminals;

a transformer to transfer electrical power from the input terminals to the output terminals;

a switch to control the transformer in response to a switching signal having a switching frequency; and

a controller to generate the switching signal and to allow the switching frequency to hop from frequency to frequency according to a digital pattern.

23. (Original) The power converter of claim 22, wherein the controller adjusts the digital pattern.

24. (Original) The power converter of claim 22, wherein the controller generates the switching signal in response to a first feedback signal associated with a voltage control loop and a second feedback signal associated with a current control loop.

25. (Currently amended) A power converter comprising:

input terminals and output terminals;

a transformer to transfer electrical power from the input terminals to the output terminals;

a switch to switch the transformer in response to a switching signal having a switching frequency; and

a controller to generate the switching signal in response to a first feedback signal associated with a voltage control loop and a second feedback signal associated with a current control loop in the primary-side of the transformer;

wherein the controller includes a pattern generator to generate a digital pattern and the controller uses the digital pattern for use in generating the switching signal as a frequency-hopping switching signal to the switch.

26. (Original) The power converter of claim 25, wherein the voltage control loop provides voltage-loop frequency compensation and the current control loop provides current-loop frequency compensation.

27. (Original) The power converter of claim 25, wherein the controller comprises:

a first waveform detector to generate the first feedback signal and a discharge-time signal of the transformer;

a second waveform detector and an integrator to generate the second feedback signal;

a first error amplifier and a second error amplifier for amplifying the first feedback signal and the second feedback signal, respectively;

an oscillator to generate a pulse signal and a timing signal in response to an output of the second error amplifier;

a peak-current limiter to limit a sensed current signal; and

a PWM circuit to generate the switching signal in response to the pulse signal, an output of the first error amplifier, and an output of the peak-current limiter.

28. (Original) The power converter of claim 27, wherein the first waveform detector generates the first feedback signal by sampling a voltage signal from an auxiliary winding of the transformer, and generates the discharge-time signal using a discharge-time of a secondary-side switching current of the transformer.

29. (Original) The power converter of claim 28, wherein the integrator integrates an average-current signal with the discharge-time signal.

30. (Original) The power converter of claim 29, wherein the average-current signal is derived from a current-waveform signal integrated with the pulse width of the timing signal.

31. (Original) The power converter of claim 30, wherein the pulse width of the timing signal correlates with the switching frequency of the switching signal.

32. (Original) The power converter of claim 27, wherein the controller further comprises:

a programmable current source to provide temperature compensation and to generate a programmable current in response to a temperature of the controller.

33. (Currently Amended) The power converter of claim 32, wherein the controller further comprises:

~~a pattern generator to generate a digital pattern;~~

a first programmable capacitor coupled to the oscillator and the pattern generator for modulating the switching frequency in response to the digital pattern; and

a second programmable capacitor coupled to the integrator and the pattern generator for correlating the time constant of the integrator with the switching frequency; wherein the capacitances of the first programmable capacitor and the second programmable capacitor are controlled by the digital pattern.

34. (Original) The power converter of claim 33, wherein the time constant of the integrator correlates with a switching period of the switching signal.

35. (Currently amended) A power converter comprising:

a transformer coupled to an input voltage for the power converter;

a switch to switch electrical power flowing through the transformer;

a sense device coupled to the transformer to sense at least current through a primary winding of ~~from~~ the transformer; and

a controller coupled to the transformer, the controller to provide a switching signal to the switch for regulating output power for the power converter, and to control the switching signal based on a first feedback signal associated with a first control loop and a second feedback signal associated with a second control loop in the primary-side of the power converter;

wherein the controller includes a pattern generator to generate a digital pattern and the controller uses the digital pattern for use in generating the switching signal as a frequency-hopping switching signal to the switch.

36. (Original) The power converter of claim 35, wherein the first control loop includes a voltage control loop and the second control loop includes a current control loop.

37. (Original) The power converter of claim 35, wherein the controller generates the first feedback signal and a discharge-time signal by sampling of a voltage associated with the transformer and a discharge-time of the transformer during an off time the switching signal.

38. (Original) The power converter of claim 37, wherein the controller generates the second feedback signal in response to the discharge-time signal and sensed current from the sense device, and controls the switching frequency of the switching signal in response to the second feedback signal.

39. (Currently amended) The power converter of claim 35, wherein the controller comprises:

a first waveform detector coupled to the transformer, the first waveform detector to generate the first feedback signal and the discharge-time signal by sampling of a voltage signal from an auxiliary winding of the transformer, wherein the discharge time signal corresponds to the discharge time of the secondary-side switching current of the transformer;

a second waveform detector and an integrator, the second waveform detector and integrator to generate the second feedback signal by integrating an average-current signal with the discharge-time signal;

a first error amplifier and a second error amplifier to amplify the first feedback signal and the second feedback signal, respectively;

an oscillator coupled to the second error amplifier to generate a pulse signal and the timing signal in response to an output of the second error amplifier;

a peak-current limiter coupled to the sense device to limit a maximum value of the current signal; and

a PWM circuit to generate the switching signal in response to the pulse signal, an output of the first error amplifier, and an output of the peak-current limiter.

40. (Original) The power converter of claim 39, wherein the second waveform detector generates the average-current signal by integrating a current-waveform signal with the pulse width of the timing signal, wherein the current-waveform signal is a measured current signal.

41. (Original) The power converter of claim 39, wherein the pulse signal determines the switching frequency of the switching signal.

42. (Currently amended) The power converter of claim 41, wherein the controller further comprises:

a programmable current source coupled to an input of the first waveform detector for temperature compensation, and wherein the programmable current source ~~is generate~~ generates a programmable current in response to a temperature of the controller.

43. (Currently amended) The power converter of claim 42, wherein the controller further comprises:

~~a pattern generator to generate a digital pattern;~~

a first programmable capacitor coupled to the oscillator and the pattern generator for modulating the switching frequency in accordance with the digital pattern; and

a second programmable capacitor coupled to the integrator and the pattern generator to correlate a time constant of the integrator with the switching frequency, and wherein the capacitances of the first programmable capacitor and the second programmable capacitor are dictated by the digital pattern.

44. (Original) The power converter of claim 43, wherein the time constant of the integrator correlates with the switching period of the switching signal.

45. (Original) The power converter of claim 39, wherein the first waveform detector comprises:

a sample-pulse generator to generate a sample-pulse signal;

a threshold generator to generate a threshold signal that adds to the voltage signal to produce a level-shift signal;

a first capacitor and a second capacitor to provide a first-hold voltage and a second-hold voltage;

a first signal generator to generate a first sample signal and a second sample signal, wherein the first sample signal and the second sample signal are used for alternately sampling the voltage signal;

a buffer amplifier to generate a hold signal from a higher voltage of the first-hold voltage and said second-hold voltage;

a first output capacitor to generate the first feedback signal by sampling the hold signal; and

a second signal generator to generate the discharge-time signal.

46. (Original) The power converter of claim 45, wherein the first signal generator alternately generates the first sample signal and the second sample signal in response to the sample-pulse signal during an enable period of the discharge-time signal.

47. (Original) The power converter of claim 46, wherein the first signal generator inserts a delay time at a beginning of the discharge-time signal and wherein the first sample signal and second sample signal are disabled during the period of the delay time.

48. (Original) The power converter of claim 45, wherein the second signal generator generates the discharge-time signal such that it is enabled as the switching signal is disabled, and wherein after the delay time the discharge-time signal is disabled once the level-shift signal is lower than the first feedback signal, and wherein the discharge-time signal is disabled as long as the switching signal is enabled.

49. (Original) The power converter of claim 48, wherein the first waveform detector samples the voltage signal to generate an end voltage used for the first feedback signal, and wherein the end voltage is sampled and measured instantly before the secondary-side switching current falls to zero.

50. (Original) The power converter of claim 43, wherein the pattern generator comprises:

a clock generator to generate a clock signal; and

a register to generate the digital pattern in response to the clock signal.

51. (Original) The power converter of claim 39, wherein the oscillator comprises:

a first V-to-I converter to generate a first charge current, a discharge current, and a second charge current in accordance with an output of the second error amplifier, and wherein the first V-to-I converter includes a first operational amplifier, a first oscillator resistor, and a first group of transistors;

a first oscillator capacitor;

a first switch having a first terminal supplying the said first charge current and a second terminal coupled to the first oscillator capacitor;

a second switch having a first terminal coupled to the first oscillator capacitor and a second terminal driving the discharge current;

a first comparator having a non-inverting input coupled to the first oscillator capacitor, and wherein the first comparator generates the pulse signal;

a third switch having a first terminal supplying a high-threshold voltage and a second terminal coupled to an inverting input of the first comparator;

a fourth switch having a first terminal supplying a low-threshold voltage and a second terminal coupled to the inverting input of the first comparator;

an inverter having an input coupled to an output of the first comparator for producing an inverse pulse signal and wherein the pulse signal turns on/off of the second switch and the fourth switch, and wherein the inverse pulse signal turns on/off the first switch and the third switch;

a third resistor to generate a trip-point voltage in response to the second charge current;

a second oscillator capacitor;

a fifth switch connected in parallel with the second oscillator capacitor; and

a second comparator having an inverting input coupled to the second oscillator capacitor and a non-inverting input coupled to the trip-point voltage, and wherein the second comparator generates the timing signal.

52. (Original) The power converter of claim 39, wherein the second waveform detector comprises:

a peak detector to generate a peak-current signal by measuring a peak value of the current signal;

a third capacitor to hold the peak-current signal;

a second output capacitor to produce the current-waveform; and

a switch to conduct the peak-current signal to the second output capacitor.

53. (Original) The power converter of claim 39, wherein said integrator comprises:

a first V-to-I converter including a first operational amplifier, a first timing resistor, and a first group of transistors, wherein the first V-to-I converter generates a first int-charge current in response to said current-waveform signal;

a first timing capacitor to produce a first integrated signal;

a fast switch having a first terminal supplying the first int-charge current and a second terminal coupled to the first timing capacitor, and wherein the timing signal controls the on/off of the first switch;

a second switch connected in parallel with the first timing capacitor for discharging the first timing capacitor;

a third switch;

a second output capacitor to produce an average-current signal by sampling the first integrated signal through the third switch;

a second V-to-I converter including a second operational amplifier, a second timing resistor, and a second group of transistors, and wherein the second V-to-I

converter generates a second int-charge current in response to the average-current signal;

a third timing capacitor to produce a second integrated signal;

a fourth switch having a first terminal supplying the second int-charge current and a second terminal coupled to the third timing capacitor, and wherein said discharge-time signal controls the on/off of the fourth switch;

a fifth switch connected in parallel with the third timing capacitor for discharging the third timing capacitor;

a sixth switch; and

a fourth output capacitor to produce the second feedback signal by sampling the second integrated signal through the sixth switch.

54. (Original) The power converter of claim 35, wherein the switching signal has a minimum on-time once the switching signal is enabled in order to ensure a minimum value of the discharge-time for sampling the voltage signal.

55. (Currently amended) A power converter comprising:

a transformer to transfer electrical power from a primary-side of the power converter to a secondary-side of the power converter;

a switch to switch the electrical power transferred by the transformer, the switching being controlled by a switching signal;

a controller to generate the switching signal and to control the switching signal in response to a first feedback signal by sampling a voltage signal and a discharge-time associated with the transformer during an off time of the switching signal;

wherein the controller includes a pattern generator to generate a digital pattern and the controller uses the digital pattern for use in generating the switching signal as a frequency-hopping switching signal to the switch.

REMARKS

In the Office Action, the Examiner took the following actions:

a) objected to claim 42;

b) rejected claims 1-55 based on non-statutory obviousness-type double patenting in view of claims 1-15 of U.S. Patent No. 7,061,780; claims 1-17 of U.S. Application No. 10/943,318; or claims 1-13 of U.S. Application No. 10/943,668;

c) rejected claims 1-55 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 7,061,780 (*Yang '780*);

d) rejected claims 1, 4-13, 25-32, 35-42, and 45-55 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 7,016,204 (*Yang '204*);

e) rejected claims 1, 4, 5, 10-13, 25, 26, 35, and 36 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,836,415 (*Yang '415*), U.S. Patent No. 6,977,824 (*Yang '824*), U.S. Patent No. 7,054,170 (*Yang '170*), U.S. Patent No. 7,061,225 (*Yang '225*), or U.S. Patent No. 7,088,598 (*Yang '598*);

f) rejected claims 1, 4, 5, 10-13, 25, 26, 35, and 36 under 35 U.S.C. § 102(a) as being anticipated by U.S. Patent No. 6,674,656 (*Yang '656*), U.S. Patent No. 6,661,679 (*Yang '679*), or U.S. Patent No. 6,842,350 (*Yamada*);

g) claims 1, 4, 5, 10-13, 25, 26, 35, and 36 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,611,439 (*Yang '439*), U.S. Patent No. 5,901,051 (*Takahashi*), U.S. Patent No. 6,078,510 (*Spampinato*), or U.S. Patent No. 6,118,675 (*Lionetto*); and

h) rejected claims 1, 4, 5, 10-13, 25, 26, 35, and 36 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,912,141 (*Konno*).

By this amendment, Applicant has amended claims 1, 13, 16, 17, 25, 33, 35, 39, 42, 43, and 55, and canceled claims 2, 3, 14, and 15. Claims 1, 4-13, and 16-55 remain pending.

Applicant traverses the objection and rejections and responds to each as follows.

With regard to the objection claim 42, Applicant has amended claim 42 in accordance with the Examiner's helpful suggestion. Applicant therefore requests that the Examiner reconsider and withdraw the objection.

At paragraph no. 3 of the Office Action, the Examiner rejected claims 1-55 on the ground of non-statutory obviousness-type double patenting over claims 1-15 of U.S. Patent No. 7,061,780. In paragraph nos. 4 and 5, the Examiner provisionally rejected claims 1-55 on the ground of non-statutory obviousness-type double patenting as being unpatentable over claims 1-17 of copending U.S. application No. 10/943,318 and copending application No. 10/943,668. In response to these three double patenting rejections, Applicant concurrently submits herewith a Terminal Disclaimer to overcome each of the actual or provisional double patenting rejections.

In response to the rejection of claims 1-55 under 35 U.S.C. § 102(e) as anticipated by Yang '780, Applicant asserts that he is the sole inventor of the subject matter disclosed in Yang '780, upon which the Examiner relies for this rejection. In support of this assertion and consistent with the provisions of Manual of Patent Examining Procedure § 716.10, Applicant submits herewith his unequivocal declaration

under 37 C.F.R. § 1.132 that he invented the subject matter disclosed in Yang '780 upon which the Examiner relies to reject claims 1-55 of the present application. Applicant therefore requests that the Examiner reconsider and withdraw this rejection.

With regard to the remaining rejections listed above in items (d) - (h), Applicant submits that each of the amended independent claims 1, 13, 25, 35, and 55 patentably distinguish over each of the cited references. In particular, Applicant has amended each of the independent claims directed to a power converter to additionally recite that the claimed controller includes "a pattern generator to generate a digital pattern" and that "the controller uses the digital pattern for use in generating the switching signal as a frequency-hopping switching signal to the switch," as for example recited in claim 1. Similarly, Applicant has amended method claim 13 to additionally recite "generating a frequency-hopping signal switching signal" and "generating a digital pattern for use in generating the frequency-hopping switching signal." Applicant asserts that none of the cited references discloses such features. These features incorporated into the independent claims generally correspond to features recited in canceled claims 2, 3, 14 and 15. Applicant notes that the Examiner did not reject any of dependent claims 2, 3, 14 and 15 that recited these features in any of the claim rejections under 35 U.S.C. § 102(a), (b), and (e), and thereby acknowledged that none of the cited references teaches these features. Applicant therefore requests the withdrawal of § 102(e), § 102(a), and § 102(b) rejections set forth in the above-listed items (d) - (h).

In paragraph 17 of the Office Action, the Examiner reminds Applicant of the duty to disclose and points out that an Information Disclosure Statement was not filed in the

present application. Applicant has considered this issue raised by the Examiner and submits herewith an Information Disclosure Statement.

In view of the above amendments and remarks, Applicant submits that the pending claims are in condition for allowance. A favorable action is requested.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

Dated: April 30, 2007

By: _____
Richard V. Burgujian
Reg. No. 31,744

EXHIBIT G

EXHIBIT REDACTED

EXHIBIT H

EXHIBIT REDACTED